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Chemical Week

July 18, 1953

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Chemical Week

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OPINION . . . . . .

Tariffs Raise Howl

TO THE EDITOR: Re your Newsletter paragraphs (*June 20*) reporting on the MCA discussion of tariffs at the Greenbrier . . . Have you seen the editorial in *Canadian Chemical Processing*, June issue?

I expressed my views to the editor of that journal as follows:

"I look forward to the day when something will be done about tariffs, not only in Canada but in the United Kingdom as well. I feel that the only way to show the U.S.A. the consequences of her policy is to have equivalent tariffs—that is, impose the same duties on the entry of U.S. goods into Canada or the UK as they impose on the entry of the same goods into the U.S. What a howl that would raise!"

When will the U.S. realize that her high tariffs are losing her friends? If her next-door neighbor reacts as she is doing, how is the rest of the world reacting?

J. C. WILLIAMS
London, England

Problem is Balance

TO THE EDITOR: I have been interested for some time in your news and editorial comments regarding tariff protection. It is encouraging to note, in your June 20 Newsletter, the suggestion that the question should be approached on a basis of solid facts and not too narrowly.

My own company has been active in the importing trade for some 90 years but primarily in connection with essential raw materials from overseas, so that . . . we do not cross swords with domestic interests. However, as chairman of the Foreign Commerce Committee of the New York Chamber of Commerce, I have been called upon from time to time to speak on behalf of broader interests, and it seems to me that the views expressed by or on behalf of the chemical industry should not . . . go unanswered. . . . It is impossible to compress into a short letter an adequate presentation of facts and arguments on behalf of broader importation; I can present only the barest outline . . .

The necessity for an increase of import volume breaks down into two classifications or orders of urgency: 1) For National Survival: As a nation we cannot stand alone against the world; we must have as allies the other free nations . . . who value their freedom and . . . will join in defending it, if economically able to do so. Several of our potentially strongest allies, particularly Germany, Japan and Great Britain, do not have enough farmland . . . to produce enough . . . food and . . . other essentials necessary for their survival.

They must obtain a substantial part of these things from us or from Russia and its satellites. Unless we wish to force these people into the arms of Russia we must supply them this food and other essential material. Unless we wish to pauperize them and to bankrupt ourselves we cannot forever give them these things free.

If they are to be able to pay us . . . they can do so only with other goods. For our own security and survival we must find . . . means of taking an increased volume of imports from these peoples.

2) For Industrial and Agricultural Prosperity: Beyond the furnishing of those [necessary] foods and materials . . . we cannot further maintain or expand our foreign markets for our agricultural and manufactured products without taking a corresponding further volume of goods in payment.

We must, therefore, make two decisions. The first is how to accept and distribute the volume of imports necessary for our own survival . . . The second is to determine whether or not we are to accept additional goods from foreign markets, sufficient to support a corresponding market for American goods, and if so, how much and what kind of goods and how they are to be distributed.

We cannot have all our cake and eat it too. To meet our first and terribly urgent problem, and perhaps to meet part of our second problem, some cost must be paid in reduced prosperity for some competing American products.

To me and to my associates it does not appear reasonable that the cost should be wholly borne by American exporting industries and agriculture, by depriving them of export markets, nor that it should be wholly borne by domestic interests who would be injured by untrammeled importation of foreign products. The problem is how to balance the benefit and the injury between opposing U.S. interests, to

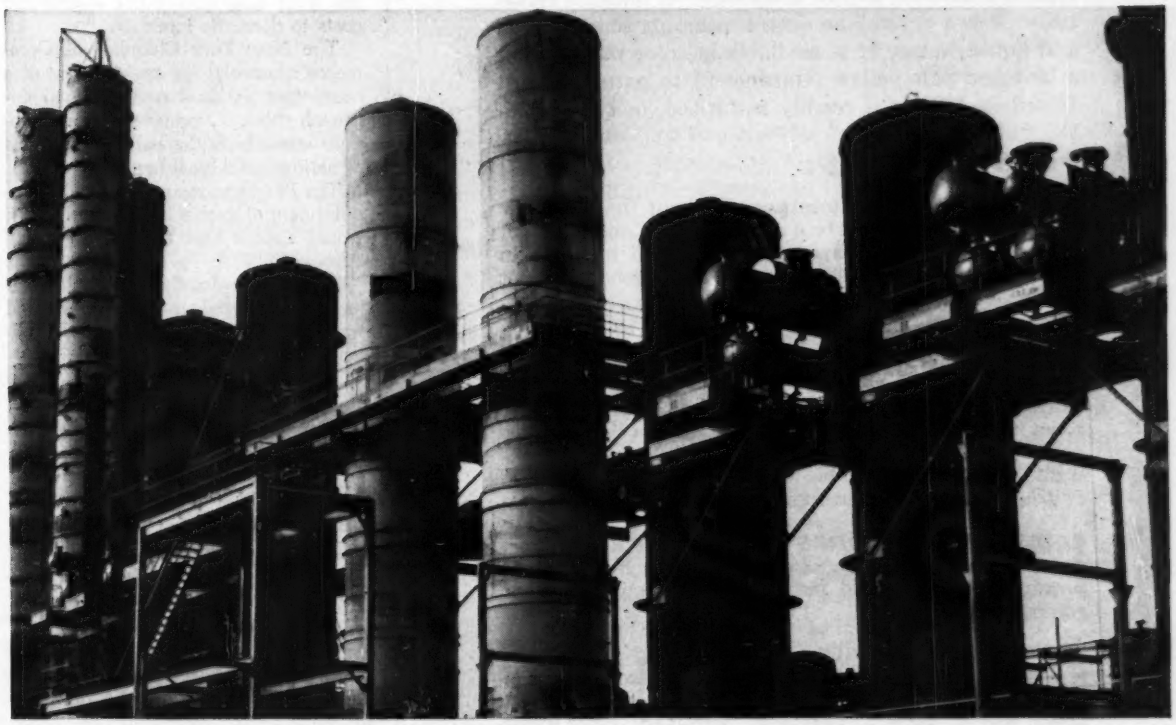
CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: W. A. Jordan, Chemical Week, 330 W. 42nd St., New York 36, N.Y.

DOW

DOW BUILDS NEW FACILITIES FOR VINYLTOLUENE PRODUCTION

New DOW monomer offers properties of special interest to users of styrene. Quantities now available for development work



Another new monomer is ready to take a major position with other Dow monomer "firsts" that are playing important roles in industry. Dow's new plant for the full-scale production of vinyltoluene will be completed this year and will be in production early in 1954.

Priced to match the economies of styrene, vinyltoluene offers many new properties of special interest to members of the resin industry working with rubber reinforcing resins, styrenated oils and alkyds, styrene butadiene copolymers and polyester resins.

Quantities of vinyltoluene sufficient for development work are already available for your use. Also, the experience of Dow's technical service staff will be of substantial assistance in development work to determine the advantages that vinyltoluene can contribute to your product. For further details regarding properties of vinyltoluene write to THE DOW CHEMICAL COMPANY, Midland, Michigan, Plastics Department, PL 1372D.

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DOW

maximize the benefit and minimize the loss, but at all costs to assure the national defense.

If it is axiomatic . . . that imports from certain areas must be increased, it is not at all clear that it would be fair or reasonable that the chemical industry should either bear no share of the necessary readjustment, or that it should bear a disproportionately heavy share.

The chemical industry should be as efficient, as resourceful, and as patriotic as any other . . . should join in a broad-minded approach to this problem, not on how to exclude competing imports, but on how to admit enough imports for the national interest with the least and most fairly distributed costs to domestic interests.

The New York Chamber of Commerce sponsored the appointment of a competent national committee to approach this . . . problem and to propose answers in the balanced interest of national and local benefit.

The President recommended the appointment of such a commission and it would appear that the Congress will approve.

The chemical industry should lend its wholehearted and broad-minded support to this approach to the problem.

C. E. Bingham
President
Bingham & Co., Inc.
New York, N. Y.

Ps, Qs and Ss

To the Editor: . . . Re your news article "Sulfuric on the Escalator" (July 11) . . . we think you ought to watch your Ps, Qs and Ss (for sulfur) . . . Particularly, you refer to Gulf Sulphur Corp. as a producer. In our opinion they probably will not be a producer of sulfur until sometime in 1955-1960 . . .

You are absolutely correct on the upward trend on sulfuric acid prices . . .

Seymour Schwartz
President
S. Schwartz and Associates
New York, N. Y.

DATES AHEAD

American Soybean Assn., 33rd annual convention, Jefferson hotel, St. Louis, Mo., Aug. 20-21.

Conference on Nuclear Engineering, University of California, Berkeley, Calif., Sept. 9-11.

American Institute of Chemical Engineers, Fairmont and Mark Hopkins hotels, San Francisco, Calif., Sept. 13-16.

DEPRECIATION

And Its Crucial Economic Role

The sixth annual McGraw-Hill survey of Business' Plans for New Plants and Equipment, just completed, reveals some remarkable facts about the role of depreciation in our economy. To most people, depreciation is a technical term, used by accountants to discuss a dull subject. But it really is a simple matter: It is the amount of money set aside each year by a company to replace plant and equipment that is wearing out. And here are some facts from this survey* which show how depreciation can make the difference between prosperity and recession in the United States:

1. *In 1953, about half of all the money spent on new manufacturing plants and equipment will come from depreciation reserves.* For the future, manufacturing companies are relying even more heavily on this source of money. In the years 1954-56, they count on using their depreciation funds to pay for almost two-thirds of the new plants and equipment now planned.

2. *The amounts of money made available by depreciation allowances vary greatly from industry to industry.* Some industries, such as those producing steel, chemicals and petroleum products, will have relatively large amounts of cash available from their depreciation reserves. In considerable measure, this is because the government is allowing them to accumulate such reserves at an accelerated rate as an encouragement to build facilities required for national defense. But most of the companies engaged in the production of textiles, processed foods and many kinds of machinery have had little chance to benefit by this provision for accelerated depreciation. Hence, they have much less money available from depreciation reserves.

3. *There is a definite shortage of investment funds in the industries that have relatively low depreciation allowances.* Taken together, the coal mining, textile, food processing, machinery and other metal-fabricating industries plan to spend about $4.7 billion for new plant and equipment this year. But they report that they would spend $1.5 billion *more* per year during the period 1954-56 if sufficient funds were available.

4. *Eighty-five per cent of the manufacturing companies covered by the survey reported that they plan to invest all their depreciation funds* to keep equipment up-to-date and to provide capacity for new products and new markets. These companies could let their depreciation funds pile up as idle cash. But the intention is to spend most of them for capital equipment.

*The sixth annual McGraw-Hill survey of Business' Plans for New Plants and Equipment included companies that provide 25 per cent of all industrial employment and 60 per cent of employment in those industries where capital investment is highest. These companies are mostly the larger companies in their respective industries. A copy of the full report of this survey can be obtained by addressing: Department of Economics, McGraw-Hill Publishing Company, Inc., 330 West 42nd St., New York 36, N. Y.

Hence, there is a direct relationship between the amount of depreciation funds available and the level of capital investment. And it is upon the latter that the level of general prosperity decisively depends. One-third of all industrial workers are engaged in producing or installing such equipment.

This fact that the level of depreciation allowances has a major bearing on the level of capital investment should not surprise anyone. In several foreign countries where these allowances have been increased, investment has boomed. The two nations with the highest ratios of investment to national income are Canada and Norway. Both countries adopted flexible depreciation policies after World War II. In Sweden and The Netherlands also, flexible depreciation allowances have contributed to rapid industrial expansion. Finally, the tremendous investment brought about by our own rapid amortization program shows dramatically the importance of depreciation in stimulating capital expenditures.

Obsolete Tax Laws

In spite of this record, the fact remains that our laws and the business procedures that govern depreciation allowances—in particular the laws and rulings that govern the deduction of depreciation from taxable corporate income—are still based on antique and obsolete accounting concepts which take no account of depreciation's dynamic role in our economy. The internal revenue code still requires most companies to depreciate their equipment over a long period, even though these small annual allowances cannot possibly pay for the investment that is necessary to keep a plant up-to-date under today's rapidly changing technology, with its production of new and improved machinery.

The only allowance made by the government for rapid depreciation is that which is authorized for certain types of plants during the defense emergency. Under this policy most companies are unable to use accelerated depreciation for tax purposes. And as defense projects are completed, the number of new authorizations is dropping. We may lose the chance to utilize fully this powerful tool for sustaining investment because, under our ramshackle emergency tax structure, accelerated depreciation is available only to a minority of firms on a temporary basis.

New Policy Needed

A sensible, up-to-date depreciation policy for tax purposes is long overdue. Either the Treasury must modernize the internal revenue code on its own initiative, or Congress must take the lead by writing into permanent law a flexible depreciation policy applicable to all companies.

Treasury experts now have before them a number of proposals to allow faster depreciation for the average firm. The U.S. Chamber of Commerce has suggested that companies be allowed to deduct from taxable income 25 per cent of the cost of new equipment in the first year, with the remaining cost to be deductible over the life of the facilities. The Machinery and Allied Products Institute has long sponsored a formula that would allow full deduction in two-thirds of the estimated life of the property. In Congress, Chairman Reed of the Joint Committee on Internal Revenue Taxation has stated that we need a more flexible depreciation policy. Senator Frear of Delaware has introduced a bill that would let a business make its own choice on how fast to depreciate its equipment.

It will take time and study to determine which of these various proposals best fits the needs of the economy without sacrificing unduly the revenue needs of the government. If we are to have a new depreciation policy, designed for a long period ahead, it must be carefully worked out. But this much is clear right now: *The development of a flexible depreciation policy on the part of the federal tax authorities is one of the most important steps that can be taken to sustain prosperity. When we talk about depreciation, we are talking about the money that pays for almost two-thirds of the new manufacturing facilities now scheduled for construction. We are talking about the new investment and the new jobs on which our continued prosperity depends.*

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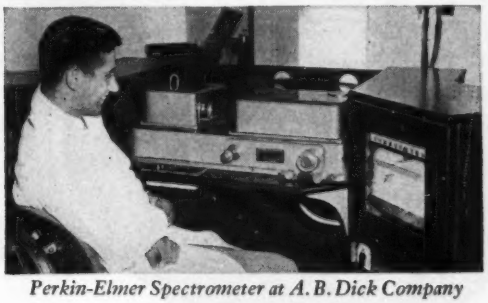

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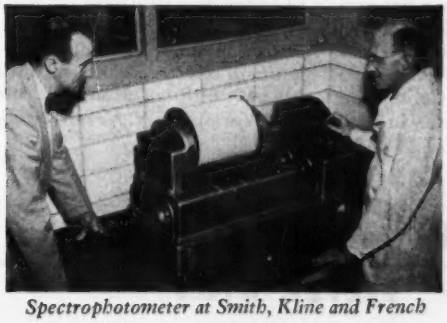

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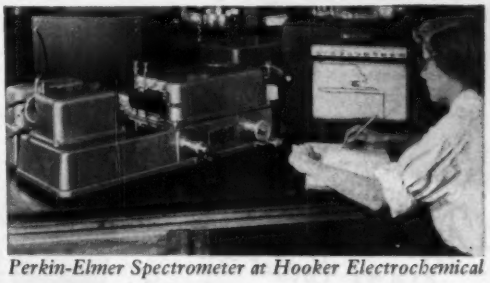

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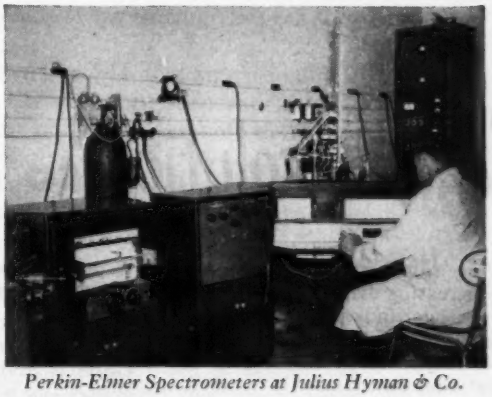

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Chemical Week
BUSINESS MAGAZINE OF THE CHEMICAL PROCESS INDUSTRIES

NEWSLETTER

The Office of Defense Mobilization's latest list of certified chemical expansions is short, but there are some provocative entries:

- Dow Chemical (Freeport, Tex.), glycerine, $5,485,000 at 60%.
- Union Carbide (Bound Brook, N.J.), epoxy resins, $360,000 at 50%.
- Phillips Chemical (Borger, Tex.), carbon black, $2,039,000 at 50%.
- National Cylinder Gas (Tampa, Fla.), high-purity oxygen, $231,510 at 50%.
- U. S. Phosphoric Products (E. Tampa, Fla.), ground phosphate rock, $1,124,590 at 45%.

•

It's a toss-up which government agency figures most prominently in the chemically significant news. This week it seems to be the Food & Drug Administration:

- Congress has again sidestepped coming to a decision on how to regulate chemical additives. The House Interstate Commerce Committee has now postponed hearings on the Delaney (D., N.Y.) and Miller (R., Neb.) bills until next year. Hearings this week were limited to Miller's pesticide bill and the Hale (R., Me.) bill on simplification of food standards procedure. The subject of food additives is being batted around by various official and quasi-official groups, but among the various scheduled reports, the one by FDA itself—scheduled to appear next June—will carry the most weight.
- The same committee has approved a new redrafted bill restoring FDA's inspection powers, but chances of its getting through Congress this session are slim.
- Also approved by the committee is a bill changing the official name of aureomycin to chlortetracycline. Its passage will permit Lederle Laboratories to trademark the aureomycin tag, while the new name will be used in FDA's antibiotic certification laws.
- Meanwhile, FDA is retrenching, trying to live within its 11% smaller income (although some of the House cuts may be restored in the final budget). The Houston staff of four, for instance, has been slashed to one; and the food-testing laboratory has been closed down, its work consolidated with the New Orleans operations.

•

Also in a state of animated suspension this week is rubber disposal. A quick disposal timetable seemed assured until last week, when scattered Democratic opposition built up into a solid phalanx of party resistance. Solid, because it is led by Democrats of all aspects—Sen. Maybank (Southern), Sen. Douglas (Northern liberal) and party leader Sen. Lyndon Johnson.

The Democrats eschew the word filibuster, but they indicate they'd like to "discuss" the bill on the floor. Hence, it may never be brought there, since there won't be time for any controversial legislation that isn't a "must." And delay until next year would bump disposal against 1954 elections. The Democrats don't offer any alternative plans; best bet is that they will label the plan a "give-away," use it as campaign ammunition in the Congressional contests.

•

More electric power at Niagara Falls cleared the first hurdle when the House approved a bill enabling five New York electric companies to build a plant on the U. S. side to supply an additional 1.1 million kw. It was a rousing victory (262 to 120) for private development proponents.

It's highly improbable, however, that the crowded legislative schedule and the July 31 adjournment target date will allow a full Senate vote this session. But the House version stands a good chance of passing the upper house next year.

Rates to customers—not amount of power to be generated—have been at issue. Public power advocates claim their production costs would be three mills per kwhr. compared with about five mills under private plans. (Cost of money and federal taxes account for the difference.) Industrial users there now pay as much as eight mills per kwhr.

•

Atomic plants' big appetite for power was underscored in a bill the House passed last week authorizing the Atomic Energy Commission to sign 25-year power contracts with utilities firms (and TVA) containing cancelation clauses that would cost the government $340 million— for plants at Oak Ridge, Tenn., Paducah, Ky., and Portsmouth, O. Previous limit on cancelation cost was $57 million.

Rep. Cole (R., N. Y.) pointed out that utilities interests couldn't contract to supply the vast amounts of power needed without such cancelation payments in the event of an AEC shutdown.

•

At the state level, pollution—both stream and aerial—is currently the focus of public and industrial attention:

• Some 80 industrialists met last week with the executive committee of the Ohio River Valley Water Sanitation Committee at Charleston, W. Va., as a first step in setting up waste disposal regulations for the Ohio River Basin. Part of the session was a "let-your-hair-down" affair from which reporters were barred.

These frank discussions of problems by industry and the eight-state (Ky., Ill., N. Y., O., Ind., Pa., Va., W. Va.) commission are expected to be the basis of recommendations forthcoming in several months.

• Scheduled for a July 28 start is a series of State Stream Sanitation Committee hearings on proposed standards for North Carolina streams.

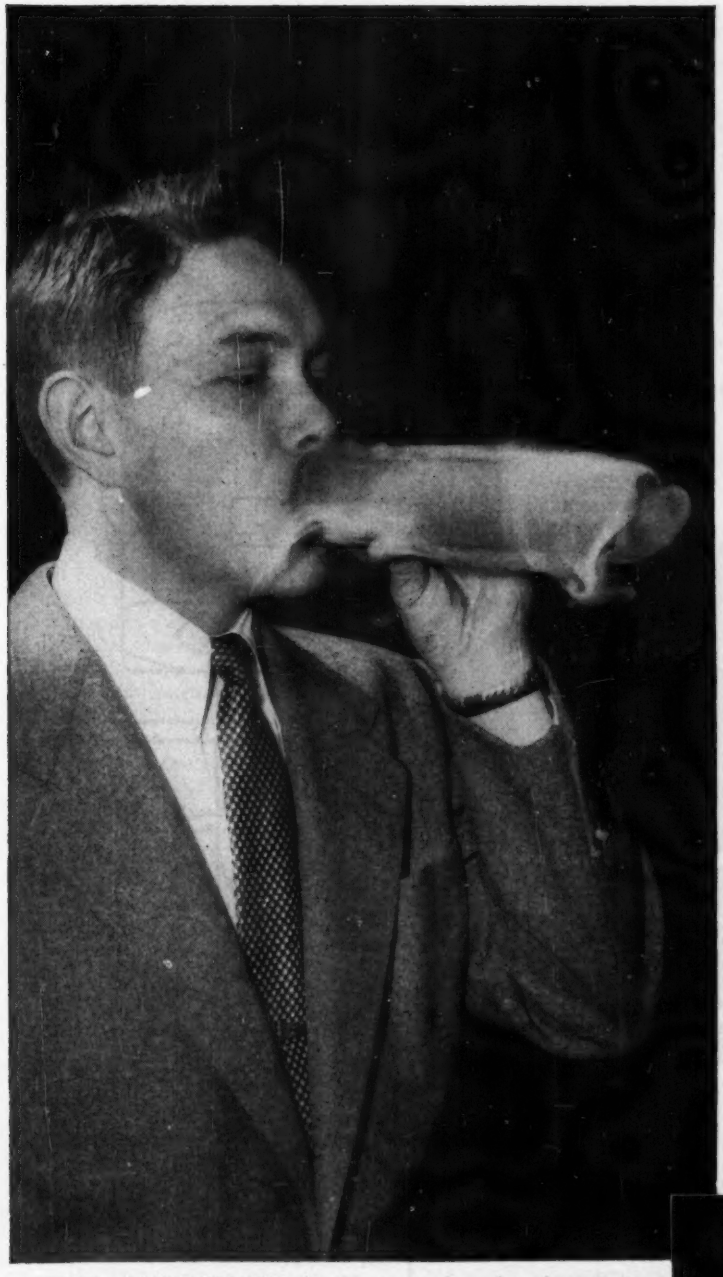
• Michigan and Ontario officials are also eyeing phenol pollution of the St. Clair River, a growing menace to municipal—including Detroit's —water supply. Culprits are the Sarnia refineries, and with more on the way (CW, July 11), officials fear pollution will go beyond the danger point. Tentatively on the docket is a parley at Toronto August 20 to decide on acceptable phenol controls.

• And in Louisville, chemical engineers from Battelle Memorial Institute moved into the heart of suspected "Rubbertown" to collect dust samples for analysis. This survey, to locate the cause of aerial pollution that has long had citizens aroused, is being paid for by the industries in the district.

•

If you're interested in algae culture as a cheap source of food and industrial raw materials, take a look at a 350-page monograph on the subject published this week by the Carnegie Institute of Washington. The most extensive work on the subject to date, it's aimed at helping organizations interested in setting up pilot plants for culture of one-cell microorganisms.

. . . The Editors



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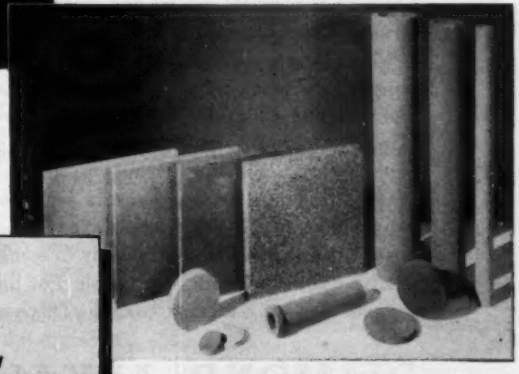

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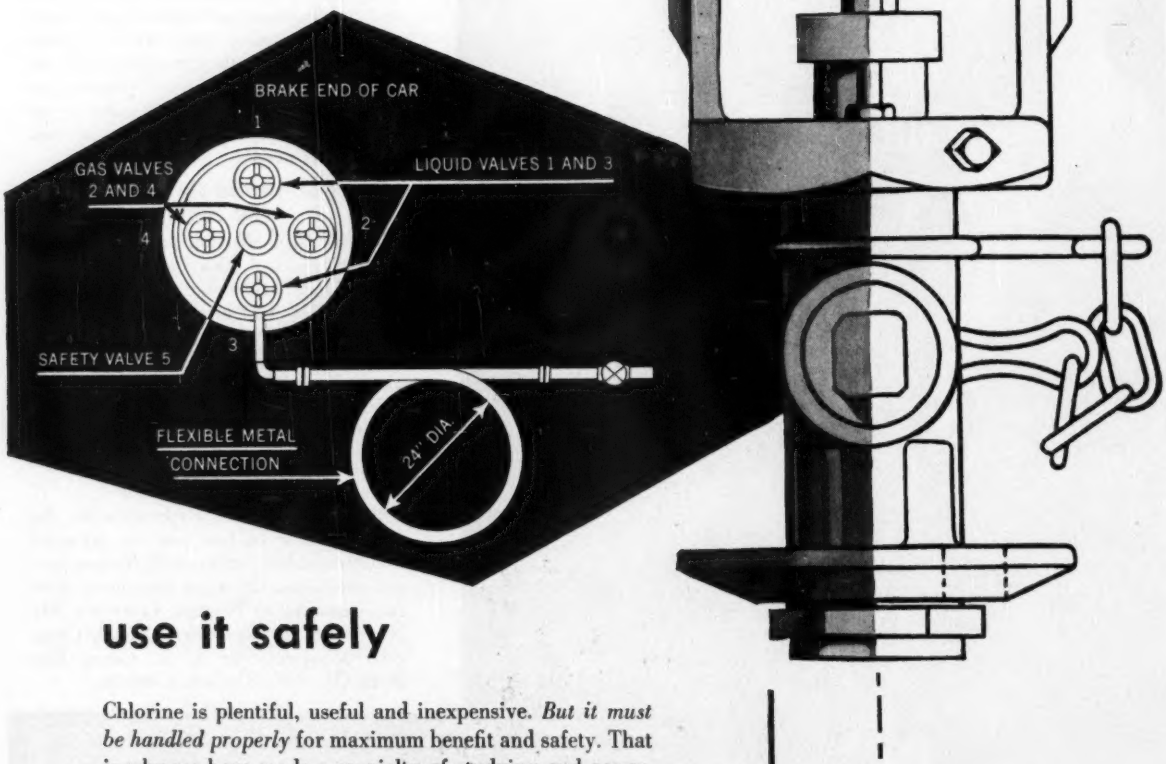

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Chemical executives who worry over inadequacies of allowable depreciation reserves under present tax laws have the chance of relief for plants built and capital goods acquired after Dec. 31, 1953.

That's the promise of a new bill just submitted by Senate Banking Committee Chairman Homer Capehart.

Capehart's bill would let companies write off capital equipment costs in five years' time, as opposed to present longer periods. In a way, this is just an adaptation of a presently employed idea. The government's tax amortization certificates, granted for Korea mobilization-essential facilities, also allow a five-year write-off.

Such a proposal would be one answer to the problem posed when a chemical company builds a new plant to make sulfuric acid or soda ash, say, that would compete with others built earlier and at lower cost, and where much of the investment has already been written off. (Of course, process developments since the earlier plants were built could change the competitive picture.)

Capehart is making his proposal as an ace-in-the-hole against any possible general business slide. He feels that his bill would help to continue modernization and expansion of U.S. production facilities.

Odds Are Slim: But since most of the important decisions asked of the 83rd Congress seem about to be put off until next year, chances are slim that Capehart's measure will be passed this year. It will be considered first by the House Ways & Means Committee—which has scheduled it for discussion as a part of its general review of the entire U.S. tax structure. Capehart's idea may then be made a part of the committee's general recommendation for new tax laws. And since Treasury Secretary George Humphrey is taking a good hard look at the country's fiscal and tax policies with an eye to asking Congress to revise its laws, it may wait until then.

Certificates Are Slimmer: But while there's this talk of a new five-year write-off plan, it's clear that chemicals aren't coming in for many new benefits under the present setup. Only five chemical certificates were included in the last write-offs granted (*see Newsletter, p. 9*).

Now, Mobilization Director Arthur Flemming has indicated that even fewer will be issued in the future. Barring a new emergency, further expansion encouragements must await a government resurvey of its mobilization goals. Washington chemical men, in talking with Flemming aides, have come away with this picture of government thinking: chemical expansion, by and large, is adequate. Even after the resurvey is complete, there may be only plans—not incentives—for future expansion.

Aid for Alcoholics

Having spark-plugged a program credited with saving the lives of more than 100 Du Pont employees and with rehabilitating about 500 other acutely ill men and women, a group of Du Pont employees next month will start a newly formed organization on a real-life testing project in alcoholism.

Mission of the Wilmington Assn. for the Study of Alcoholism will be to attempt to apply the latest findings of research in this field. The association will cooperate with Alcoholics Anonymous and with other interested groups in the Wilmington area in a plan for preventive medicine and to increase understanding of the problem.

Although the association's four trustees happen to be one retired and three active employees* of the Du Pont company, the chemical concern has no official connection with the organization. But the company, recognizing the benefits (such as low absenteeism, better safety records, and low employee turnover rates) in this work, has approved and encouraged the movement.

This is not a temperance program, the trustees make clear; its aims include throwing light on the probems of alcoholics, helping alcoholics, and education to break down the stigma of alcoholism and to gain recognition of that condition as a disease that should be properly treated.

"No man should be fired just because he is an alcoholic," trustee Gehrmann maintains. "If an alcoholic wants to [be cured], he should be given a real chance. He can be helped and he is worth helping. When an alcoholic stops drinking, he is a somebody. He is a man of character and intelligence."

Acting on this principle, Dr. Gehrmann developed at Du Pont (which claims to be one of the first major companies to recognize alcoholism as a disease and treat it as a health problem) a campaign involving extensive work and education through meetings in plants and offices, preaching the A.A. gospel to supervisors and employees.

DU PONT'S GEHRMANN: An A.A. needn't be an anonymity.

At present, 350 of the company's 90,000 employees are members of A.A. groups at 24 Du Pont plants across the country. Those units also may be joined by other residents of those localities. As this movement grew, its leaders saw a need for broadening its base of operations. For this job, they formed the new association as a nonprofit organization, financed by private contributions.

It's believed to be the first time such a project has been undertaken, although alcoholism has been a headache for industry for more than a century.

* Trustees are Everett G. Ackart, retired; Walter E. Lawson, Louis Schreiber, and Dr. George H. Gehrmann, Du Pont's medical director, who recently was awarded a citation of merit by the Malvern Institute for Alcoholism and Psychiatric Studies, Malvern, Pa., for his "leadership and courage" in attacking the alcoholism problem.

SITE IN MISSISSIPPI: Cheap power, no zoning problems.

Southbound Vanguard?

Beneath every major policy change lies a pinprick of dissatisfaction. Behind Oldbury Electro-Chemical Co.'s choice of a site for its new plant in Columbus, Miss., lurks the rising cost of power in the Niagara Falls area, (*CW, June 20*). While various bills designed to cap mounting power prices dawdle through House committees, Oldsbury has moved ahead quietly, plans to bring its $3½-million plant, this week half built, onstream by Apr. '54.

Initial product will be sodium chlorate, to be followed soon by phosphorus pentasulfide. Phosphorus will be tanked in from Niagara Falls; sulfur will be obtained from Louisiana and Texas sources. "We realized at the time we made our decision," say company officials, "that investment of more money at Niagara Falls would, without question, mean higher costs. Rates at the Falls (25-cycle rates) were already hiked up, and it seemed only a question of time before the 60-cycle rates would be boosted, too." In Mississippi, power will come from a four-county cooperative, "will be adequate, at a reasonable cost."

Oldbury's new plant is located on the Tom Bigbee River (which can be made navigable with a few slight changes), lies 10 ft. above the highest known flood level, boasts of plenty of elbow room on a 460-acre site.

The community has rolled out a red carpet. Local residents, conditioned by radio broadcasts, barbecue, luncheon meetings with company officials, have welcomed the Oldbury plant with open arms. Columbus Chamber of Commerce leaders even verbally offered to share purchase of the plant site, helped in selecting the three parcels of land eventually bought from farmers. Carriers have been helpful, too: the St. Louis and San Francisco R.R. will build a siding direct to plant.

"Pollution," breathes a relieved management, "should not be a headache in Mississippi." When Oldbury started in Niagara Falls (1896), the surrounding area was open country, but zoning board officals let housing creep in close to plant buildings. The result: Oldbury has been obliged to spend a lot of money to prevent air pollution, has had to put in an elaborate phosphorus effluent screening system.

One further consideration: ducking the congestion of chemical plants in Texas and the Southwest, Oldbury management "took the bull by the horns and settled down halfway in between the best market areas for chlorates." Shipping to the heavy Western farm area is profitable; the paper bleaching manufacturers in Florida are within range.

For the present, Columbus activities will augment Niagara Falls output. Significantly, however, potential production, at the Mississippi site will exceed present Oldbury output.

Ammonia

Take a firm which in the past five years has increased sales by over 20% each year, pre-tax earnings by a yearly average of 30%, and total assets by almost 40% a year. By anyone's definition, this is a growth company. Few growth concerns have made such a record—especially if their main product is a common inorganic chemical—but Spencer Chemical has. So far it has tied its growth record to ammonia, and its aggressive management has a hopper of ideas for diversification.

Last Thursday, Spencer broke ground at Orange, Tex., for its 45-million lb. polyethylene plant. As such, it was a tangible sign of company diversification. But it was not the only one: the firm is now producing methanol, formaldehyde, hexamine and chloro-isopropyl carbamate. These, and the materials now under development, bode well for a firm just past its seventh birthday.

Spencer was organized in June, 1946, to convert the ammonia-producing Jayhawk Ordnance Works at Pittsburg (Kans.) to commercial fertilizer.

How It Began: The Spencer family was in the coal business, and it was here that Kenneth Aldred Spencer got his start as a young mining engineer.

He was a doer. At 27, while his parents were in Europe, he relocated a major part of the family coal facilities from Oklahoma to Missouri. In the next few years he invented a process to recover iron oxide and sulfide from coal tailings, a device for separating minerals of different densities, and an apparatus for dumping coal cars; he organized three companies – Osage Coal Co., Mineral Products Co., and Midwest Radiant Corp. He still presides over the first two.

When World War II broke out in Europe, Spencer, then 37, and two other engineers surveyed the Missouri-Kansas-Oklahoma area to find locations for integrated chemical facilities. He reasoned that if the U.S. were brought into the war, ammonia-ammonium nitrate facilities could find immediate use. It was, and they did. The government accepted his idea, built Jayhawk, and hired Spencer and his Military Chemical Works, Inc., to run it.

At the end of the war, Spencer leased Jayhawk, restyled Military Chemical into Spencer Chemical.* The new corporation began operation on June 3, 1946, with $46,000 in

* For Charles Favor Spencer, Ken Spencer's father, and the company's first board chairman.

Fathers a Brood

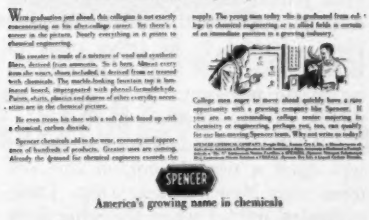
physical assets, 3 products and 10 customers. In its first 28 days of operation, it netted $99,941 on $623,715 sales. The next year, it netted $2.75 million on $12.75 million.

Came 1948 and Spencer decided it was time to buy Jayhawk. He arranged these terms with the government: the plant, which cost $32 million, might be purchased for just over $11 million, including a $2-million cash down payment. He had $400,000 available from the Spencer treasury, got $350,000 more from the family and its Pittsburg and Midway Coal Mining Co., and obtained the remaining $1,250,000 from the venture-seeking J. H. Whitney & Co.

Spencer himself still owns about one quarter of the common. The Whitneys hold about 7%; the rest of their holdings were sold to realize a capital gain. The prospect of such a gain, of course, was their reason for making the original investment. In addition to the Spencer management and Whitney, there is one other large stockholder of record: Pittsburgh's Mellon Bank has extensive holdings of the two preferred stock issues.

Products and Plants: A natural move from making ammonia alone is to add methanol production. And methanol provided the *raison d'edifier* for Spencer's second plant. In 1949, it erected facilities at Calumet City, near Chicago, for making methanol-derived formaldehyde. The plant, which initially used Jayhawk methanol, is adjacent to the facilities of a major consumer, Catalin Corp. of America. Spencer, because of its location, also has an advantage over other formaldehyde makers looking to the Midwest for customers. With much formaldehyde still sold as 37% water solution, Spencer has a definite edge on freight charges.

Look ALL around, young man



COMPANY ADS: For new engineers, an exhortation.

In 1950, Spencer acquired another war-surplus bargain. For $3 million it bought the government ordnance works at Henderson, Ky. This plant had produced ammonia from coke, but Spencer converted it to use natural gas, as does Jayhawk. Both ammonia facilities are efficient, relatively low-cost, and probably give Spencer an almost 50% gross profit at the present $85/ton price.

Scheduled to go onstream this fall is a new ammonia plant at Vicksburg, Miss. While the cost of this plant is roughly equal to the original purchase price of Henderson and Jayhawk combined (for about one-third the capacity), Vicksburg is potentially Spencer's lowest-cost ammonia unit since it uses a recently developed process to make hydrogen by partial oxidation of natural gas.

Pains of Growth: Many companies, in their early formative years, set up or acquire subsidiaries. Spencer has only three. Quaker Valley Constructors, originally formed to build Spencer plants, now takes outside contracts, has done work for Standard Oil of Indiana and Sinclair.

A second subsidiary is Sunflower Natural Gas, which had certain oil and gas holdings. A contract for the natural gas used at Jayhawk tied in its wells and those belonging directly to Spencer with those of Cities Service. In recent years, however, Sunflower has not been active as a distinct corporate personality.

Spencer's third subsidiary, set up during the early days of the European Recovery Program, originally was named the Emergency Export Corp. It produced, in several government ordnance plants, ammonium nitrate for fertilizer which was purchased by the government for shipment overseas. Spencer's current nitrate fertilizer emphasis centers on the less hazardous, non-wax-coated pellet and the solution forms of ammonium nitrate.

Emergency Export later became the Spencer Service Co. And now, with Spencer's embarkation on polyethylene operations at Orange, Tex., it has become the Spencer Chemical Co. of Texas.

We Want YOU: With the entry into polyethylene, Spencer management is naturally in flux. And not only are staff assignments changing, but a considerable personnel expansion is under way.

KENNETH SPENCER: For a doer, diversification.

Like many other companies, it puts a special employment solicitation note in its college engineering magazine advertisements, but like few others, it carries the idea into national news magazines (*see cut*). After pointing out the increasing importance of chemical engineering, Spencer declares:

"College men eager to move ahead quickly have a rare opportunity with a growing company like Spencer . . . perhaps you, too, can qualify for our fast-moving Spencer team."

Farmers' Friend: The company has a cleverly conceived liaison—which, while bettering its public relations, is perhaps just as much advertising promotion. With the National Assn. of Soil Conservation Districts, Spencer sponsors a public speaking contest. For the $1,700 in prizes and the cost of sending the winner to the NASCD convention, Spencer is able to get its name mentioned throughout the year in the bulletins that go out to the more than 70,000 association members.

As another fertilizer promotion, the company publishes a magazine for fertilizer dealers. The publication now contains a minimum of direct selling. Instead it concentrates on helping the dealers with general merchandising and sales techniques. The magazine is insurance for a depression, since it could be used for hard selling.

But gimmicks are not the key to Spencer's progress. Its success has a good deal broader base.

The company's evaluation of new

projects is a case in point: the development department—working from ideas supplied from both inside and outside the company—will spend two to three weeks in a preliminary survey on a new product or process.

If this evaluation is favorable, the company's research and development manager routes it on to the line departments. The departments themselves take part in the detailed investigation. Engineering provides an estimate of construction and equipment costs; operating, the production charges; finance, how the money would be raised.

These summaries then go back to the R&D manager who collates them into a single report on which the executive committee votes. The people in the line departments who hold the ultimate responsibility already know about the project. If the executive committee gives its o.k., Spencer is ready to go.

In most companies, the entire detail job is done by the development department, and, if approval is given, it is rechecked by the line divisions, which, despite the approval, still must be sold on the project.

It was this fast teamwork that got Spencer to the top of the list of Imperial Chemical Industries polyethylene licensees: it got first look at the British operating unit. And since it's buying, rather than making, its ethylene raw material, it feels it may well be the first new company to actually make polyethylene.

Spencer considers the plastic only the first of a series of ethylene-derived chemicals it will produce. Polyethylene comes first, because it is probably the most immediately profitable.

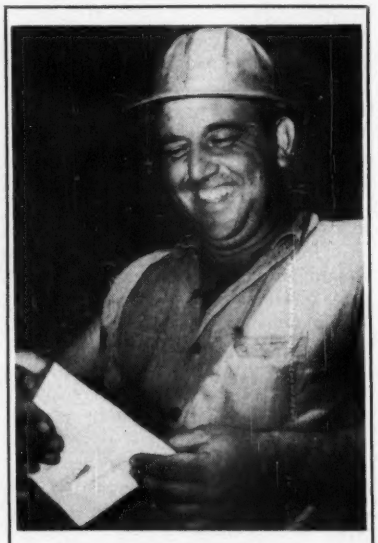
Time and Again: In a way, Spencer's entry into polyethylene is rather similar to its start in commercial ammonia production. A product this new would normally mean the building of an entirely new sales staff.

The plastics industry traditionally has been considered a field where buyers look for the best technical service. Spencer plans to duck this one—it feels that about three quarters of the polyethylene produced goes to large users who don't want sales-service people in their plants. Such customers, Spencer says, just want a consistent, quality product.

Ethylene chemicals aren't the only diversifications under consideration. One promising field is carbamates, which Spencer would produce by nitrating urea, then reacting with an alcohol. Methyl and isopropyl carbamate are promising diesel fuel additives. Spencer is working to develop other markets.

What would happen if a polyol—not a monohydric alcohol—were reacted with the nitrated urea? Polymers are produced, but Spencer is reluctant to go into detail.

Whether it's a new unit for an old-hat product like ammonia, or a plant for the as yet dimly described carbamate polymers, Kenneth Spencer will—if past performance is a consistent pattern—be always building, never bored. He thinks business is fun.



Jumbo-Size Smile

IF TEXAS CITY is rocking along on the biggest spending binge in its history this week, credit goes to Carbide and Carbon Chemicals Co., which parceled out a total of $1.4 million to employees, the result of a two-year company-sponsored savings program. Some 1,889 employees got in on the windfall; average payoff was $725; many workers got as much as $1,000. Terms of the plan: for each dollar contributed by an employee to his account, Carbide kicked in up to 30 cents, depending on length of service.

COMPANIES . . . .

Parke, Davis & Co. will begin construction of a combination manufacturing laboratory and branch office in Santiago, Chile, within the next three months. Construction is expected to be completed by mid-1954; production will include the full line of Parke-Davis pharmaceuticals.

It's the fifth new P-D facility opened in the past year, follows installations in Caracas, Venezuela; Buenos Aires, Argentina; Rio de Janeiro, Brazil; and Mexico City.

•

Metal Hydrides, Inc., Beverly, Mass., has purchased additional plant acreage (60 acres) in Beverly for future expansion. While full plans are not completed at this time, company officials say they'll conduct research and development work as well as chemical production at the new site.

•

Mohawk Rubber Co., Akron, O., taking a cue from some of its larger competitors, has established a plastics and new products division with headquarters in Roanoke, Va. Initial products: a laminated type of polyester plastic reinforced by glass fibre; plastic pipe. Operation will begin in mid-August, will aim mainly at the laminated plastics field.

Mohawk is the fifth Akron tire company to get into the plastics business.

•

Hooker Electrochemical Co. has bought the Marble-Nye Co., Worchester, Mass. Transfer of ownership became effective July 1; the firm is continuing to operate under its own name as a subsidiary of Hooker. No changes in sales organization or policy are presently contemplated.

EXPANSION. . . .

Plastics: The Du Pont Co. has upped the investment in its Circleville, O., plant from $10 million to about $15 million. Due for completion by the end of 1954, the plant is located on a 453-acre tract two miles south of Circleville, will produce Mylar polyester film.

•

Nylon: American Enka Corp., Enka, N.C., has not as yet decided where it will erect its $35-million nylon plant that was recently granted a 40% tax write-off by the Office of Defense Mobilization (*CW, Newsletter, July 4*). The company, licensed last February to manufacture nylon under Du Pont patents, is already constructing a $3-million nylon staple and filament plant adjacent to its rayon plant at Enka as an initial step in its over-all expansion program.

•

Zinc: The American Zinc Co. says it will open a new $1-million zinc ore mine near New Market, Tenn. Daily estimated output when the mine shaft is put in operation 18 months from now: 1,500 tons of ore.

Vulcanization Accelerators

In the manufacture of thiuram sulfide type of accelerators as well as dimethyldithiocarbamic acid metal salts.

Fungicides & Insecticides

In the manufacture of the zinc and iron salts of dimethyldithiocarbamic acid which is used in the form of its zinc and iron salts as agricultural fungicides.

In making the new systemic insecticides, such as octomethyl-pyrophosphoramide.

Fuel

Internal coolant to improve the performance of reciprocating engines.

Dyes, Drugs, Pharmaceuticals

In the synthesis of caffeine, aminophylline, theophylline, and vasoconstrictors.

In the manufacture of anti-malarials and long-chain quaternary ammonium compounds.

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Herbicides

As a neutralizing and solubilizing agent in preparation of concentrated solutions of 2,4-D salts and mixtures of 2,4-D with 2,4,5-T.

Catalysts & Accelerators

As catalysts where alkaline conditions are required for polymerization.

Textiles

To improve affinity of cellulose acetate rayon for direct cotton dyes.

In the manufacture of long-chain quaternary ammonium compounds for use as softeners, lubricants, and water-proofing agents.

Leather

For use in unhairing hides.

Surface-active agents

In the manufacture of amide and sulfonated amide-type detergents and surface-active agents.

Polymerization Inhibitor

Inhibits polymerization of unsaturated hydrocarbons during distillation.

Used as a stabilizer for certain types of resins.

Used to reduce webbing of natural and synthetic rubber latexes during dipping operations.

Other Uses

In the manufacture of photographic chemicals, the explosive tetryl, amide-type plasticizers, and ion-exchange resins. Useful as activators for paint and varnish removers based on chlorinated hydrocarbons.

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Doomed by Shortage?

Shortage lies at the core of the trouble today in India's bright new chemical industry. Bogged down by lack of basic raw materials and a dearth of capital, Indian chemical manufacturers alternately assail their own government and bitterly berate the United States for deficient aid. Grumbles one leading industrialist angrily: "The American chemical industry doesn't want to start operations in other potentially competing countries. We've cried for help, but it hasn't been forthcoming."

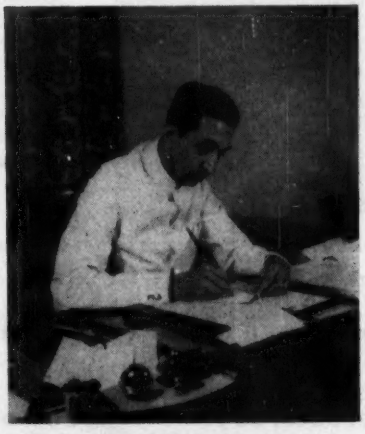
Want—long the cry of India—lies everywhere, blocks expansion and production at every turn. Chief shortages turned up in a recent CW survey:

- Lack of certain important basic commodities such as gypsum, sulfur, pyrites and rock phosphate, for which India is still dependent on other countries.
- Severe shortages of supplies of several important crude materials from abroad. For its present requirements of soda ash (heavy), carbon black and potassium chlorate, India leans on the limited leftovers made available from the U.S. and other sources.
- A deficiency of technical men makes Indian chemical manufacturers chary about plunging into new branches of the industry.
- Underdeveloped internal communications from potential chemical centers—there's almost no interchange of ideas, knowledge.
- Shortage of capital ready to brave the potential threat of nationalization by India's socialist-leaning government.

"Lack of knowledge" says P. A. Narielwala, director of Tata Chemicals, one of the largest soda ash manufacturers in India, "is the main obstacle to expansion. Investors, conscious of previous failures, hesitate to sink more money in chemical plants. Foreign capital, too, is reluctant to enter a field so uncertain."

In an effort to carry the ball in essential sectors of the industry, India's government within the past two years has set itself up in the fertilizer, pharmaceutical and atomic minerals business. At Sindri, in Bihar, East India, a $35-million fertilizer plant went onstream last year, has turned out 240,000 tons of fertilizer in the first eleven and a half months of production. At Dehu, near Poona in Western India, a $2-million penicillin factory under construction is expected in next year. And at Alwaye, in Travancore-Cochin, the government has just opened a rare earths plant to process titanium and atomic minerals.

The total government bill of $57 million for these enterprises runs through 1956, when the five-year plan will be completed. Where the expansion program has bogged down, the onus falls on private industry. Invited to spend $28 million as its part of the plan, it has as yet to drop more than



TATA'S NARIELWALA: Lack of know-how . . . major obstacle.

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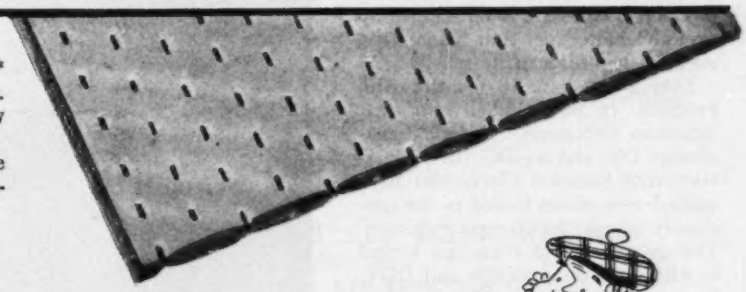

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$2 million into the expansion hopper.

There's Some Progress: Those sectors of India's chemical industry that have made progress emit the only glimmer of hope in an otherwise grim picture. Briefly they include:

• Fertilizers: in 1949, Indian production of ammonium sulfate stood at slightly over 49,000 tons/year. In 1951, it was 52,900 tons; but today's rated capacity is approximately 428,000 tons.

But it's still not nearly enough to fill the requirements of a country of India's magnitude. Latest estimates set somewhere over 2.25 million tons as a minimum production.

B. C. Mukharji, former managing director, Sindri Fertilizer & Chemicals, points out that the only hope for India's growth lies in its filling the gap between supply and demand by Indian enterprise alone, hopes that the Sindri factory is "giving the outlook of his fellow countrymen an industrial bias." Says Mukharji, "It has been truly said that India has too many philosophers . . . too few bricklayers; Sindri will perhaps be the link to keep us in touch with the rest of the world." However, the fact that the government gives signs of monopolizing the industry is a severe damper on Mukharji's challenge.

• Drugs, Pharmaceuticals: India imported over $31 million's worth of penicillin, sulfa, vitamins and streptomycin in 1951-1952, of which over $6 million's came from the U.S. Its present home industry is making strides, but the demand is so big that production will have to be stepped up several hundred per cent before even superficial needs can be satisfied.

During the past 18 months, Atul Products (a 90% Indian concern), American Cyanamid's Lederle Laboratories Div. and Squibb (in co-operation with Sarabhai Chemicals) have opened new plants touted as the precursors of an "indigenous industry." The government of India has kicked in with work on penicillin and DDT, has given assistance to the manufacturers of caffeine and quinine.

Main problems encountered in pharmaceuticals: heavy excise on alcohols, and a short supply of all solvents.

• Alcohol: two new units within the past six months have jacked up production in India from 10.3 to 12.6 million gal. Efforts are currently being made to get plants into operation in Bombay and Madras; nationalization is considered more than a vague possibility.

• Soap: the soap industry, although relatively well established, is working below capacity owing to the high price of imported coconut oil. To stimulate production, duties on imported oils have been reduced; but at present, production, hovers at less than 45% of potential output rates. Lever Bros. (India) Ltd. and the Tata Oil Mills produce 47.5% of the total.

• In the heavy chemical sector of the industry, self-sufficiency is claimed in liquid chlorine, bichromates, calcium chloride, and manganese chloride. Most important exception, however is sulfuric acid, production of which slid from 150,000 tons in 1951 to 93,000 tons in 1952. According to Indian sources, the onus really falls upon U.S. suppliers, who came up with only 44,000 tons of crude sulfur against a minimum demand of 62,000 tons.

In all its major needs—capital, a liberal supply of raw materials and know-how—India is casting an ever-hopeful eye on the U.S. That the impasse has not caused India to look elsewhere—to Soviet Russia for example—has been due more to the fact that the government of India has not yet attached sufficient basic importance to the development of the chemical industry, than to any true ideological loyalty. Moreover, New Delhi's policy of mixed economy (part socialist, part capitalist) confuses private interests, because it never guarantees not to nationalize a segment of an industry.

The result: for the present India is not likely to decline as a customer for processed chemicals from the U.S. and other western nations, but as animosity sharpens with ever-pressing shortages, trouble looms ahead.

LEGAL

Breathing Spell: In two court cases Du Pont can settle down for at least a seasonal respite.

• Since West Virginia's State Supreme Court had tossed out a previous attempt to incorporate the town of Belle, with Du Pont's ammonia plant included within the corporate limits, a lower court now has approved incorporation plans that leave the chemical plant outside the limits. Du Pont has contended that if its property were in the city, it would have to pay 85% of the taxes, would receive no benefits.

• The last chunk of evidence has gone into the record in the antitrust trial at Chicago in which General Motors and U.S. Rubber are co-defendants with Du Pont. In 91 days of trial, the record swelled to more than 13,000 pages, or about 2 million words, and more than 2,000 documents have been received as evidence.

Small-Town Twist

AMERICAN COATING MILLS, Elkhart, Ind., is endearing itself to local citizenry while adding zip to reception-room monotony. Its special ingredient: a pile of local high-school annuals dating back over the past 10 years. The yearbooks elicit comment from visitors, give American Coating personnel a chance to swell with civic pride. Triple-triumph: a friendly footing for business relations; good community spirit among workers; pleased local townfolk.

Next September, briefs will be filed and the court will hear closing arguments.

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Agencies Tell Score: Thirty-four chemical specialty companies and 18 drug stores are listed in two recent enforcement reports by the Food & Drug Administration and the Production & Marketing Administration of the Dept. of Agriculture.

FDA tagged one company for a $500 fine on a charge of shipping for food use coal-tar colors that were falsely labeled "certified." A Minnesota firm was fined $350 because its product was deficient in vitamins B_1, B_6 and C; and an Ohio concern was fined $600 for misbranding drug products.

PMA rapped 31 companies for various violations under the Federal Insecticide, Fungicide and Rodenticide Act. Most common charges were lack of registration, misbranding, lack of required information, and adulteration.

•

New Ground Rules: New policies of the reconstituted Federal Trade Commission just out in recent rulings:

• In a nonchemical but significant case, an FTC examiner has dismissed charges against Kroger Co., Cincinnati, accused of knowingly receiving price discriminations on grocery items. This dismissal was based on the recent Supreme Court decision that a buyer who gets special price reductions is not violating the Robinson-Patman Act unless it's shown that he knew the price discriminations were illegal.

• FTC's new "pro-business" majority has dismissed a complaint against Wildroot Co., Inc., Buffalo, N.Y., maker of hair preparations. The 3-2 decision cleared Wildroot of a charge of illegal use of advertising allowances and other rebates, which it granted to some dealers.

• FTC has accepted a consent settlement of a complaint against a New York rayon company. The settlement includes an order against selling any fabric that's highly flammable "without clearly stating thereon that it is highly flammable."

• Pruvo Pharmacal Co., Milwaukee, has been ordered to stop advertising that its drug product "Pruvo" will "quickly or completely relieve all pains of arthritis, rheumatism or neuritis," and that it may safely be taken by persons adversely affected by aspirin.

•

Safety Conscious City: The City of Buffalo, N.Y., appears to be at the

Double your sales potential with detergent ALKANE

You have seen the rapid growth of detergents until today they account for 50% of consumer washing product sales. Leading soapers see an ever increasing share of the total market for detergents.

The future of your company may depend on your entering the detergent market now. And packaging detergents may be easier and less costly than you think.

(1) Oronite can now offer you Alkane—the basic raw material used in making the highest quality synthetic detergent products. It is available at a consistently low price to assure you a stable market price on your finished product. Actually, during the past seven years, there have been many price decreases on Alkane because of expanding production and improved technology. Oronite Alkane is available in assured supply from three strategically-located bulk terminals.

(2) To assist you in determining your manufacturing costs, Oronite's engineering service has a plant design to fit your needs, can suggest which present equipment can be utilized, can provide equipment prices, performance data, yields—complete technical information to put you in a profitable detergent business at a minimum investment.

ORONITE CHEMICAL COMPANY
THE NAME TO WATCH IN CHEMICALS
2790

If you are interested in packaging detergents, or wish to see how economically you can convert your own operation, address an inquiry to any Oronite office. We will have a detergent engineer contact you.

"World's largest producer of synthetic detergent raw materials"

ORONITE CHEMICAL COMPANY

38 SANSOME ST., SAN FRANCISCO 4, CALIF. STANDARD OIL BLDG., LOS ANGELES 15, CALIF.
30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y. 600 S. MICHIGAN AVENUE, CHICAGO 5, ILL.
MERCANTILE SECURITIES BLDG., DALLAS 1, TEXAS

top of the list in concern about handling of explosive and flammable substances. While the city council is considering a proposed new code on handling and storage of flammable liquids, the municipality's lawyers are attacking an Interstate Commerce Commission examiner's findings that would permit a trucking firm—Riss & Co., Kansas City, Mo.—to haul explosives on two irregular routes in 10 states. One of those routes would include Buffalo.

•

Too Many Cooks: A lawyer all its own is wanted by the City-County Air Pollution Control Commission at Louisville, Ky. At present, some of its cases are prosecuted by city attorneys, others by the county's legal staff. Acting Chairman Henry Fox, whose agency has helped involve National Carbide in several lawsuits on alleged pollution, says the commission's litigation would have "better continuity" if it were handled by one lawyer.

•

Mayor Complains: Another community on the warpath in the field of air pollution is Kenilworth, N.J., where a complaint signed by Mayor William Lister and supported by 10 witnesses led to a $100 fine on Reduction & Refining Co.

•

California Code: Going into effect Sept. 9 are two new laws of possible import to chemical firms recently passed by the California legislature and signed by Gov. Earl Warren.

• One permits grocery stores to compete with drug stores in the sale of vitamin and mineral health products, providing that the preparations are properly labeled and meet requirements of state and federal food and drug laws.

• The other sets up an extra safeguard for farmers whose livestock occasionally "make hogs of themselves." It requires feedstuff manufacturers to include a special warning in labels on feeds containing a substance that is toxic if consumed in quantities greater than those recommended by the maker.

•

Floating Tax: Chemical and petrochemical companies owning boats, barges and other marine equipment on the Ohio River along the Kentucky shore will be watching the Catlettsburg school board's suit against Ashland Oil & Refining Co. The board, coveting revenue from taxes on Ashland's floating stock, cites a recent state court ruling that counties can tax certain property on the river.

Hot Water Again

On trial in Hamilton County Criminal Court at Chattanooga, Tenn., are 12 labor union members, including Glenn Smith, who has been in hot water several times during a union-leading career that has brought him in touch with several chemical companies.

At present, Smith is president of the Paducah (Ky.) Building Trades Council (AFL). which has staged a number of the many strikes at the atomic energy plant that's to be operated there by Union Carbide and Carbon.

Back in 1949, during construction of the first chemical plant (Pennsalt) at Calvert City, Ky., Smith was fined $100 in Marshall County Circuit Court on a charge based on assault of a construction superintendent during a strike.

Smith and his 11 codefendants are now accused of having incited violence during an AFL Teamsters' strike in Chattanooga in 1950-51. Specific charges include assault with intent to commit murder, conspiring to commit malicious damage with explosives, overturning an auto, breaking windows, slashing truck tires, and arson.

LABOR

Fuller Pockets: Some chemical companies have been in the front rank of firms bestowing new benefits on their employees this summer:

• At the neoprene plant near Louisville, Ky., Du Pont is raising wages by 8¢/hour, retroactive to June 15, bringing average base pay up to $2.02 for hourly paid employees. This increase apparently was granted by the company without negotiating with the International Chemical Workers Union (AFL), which won the bargaining election there several months ago. Du Pont is opposing ICWU's certification as bargaining agent for the 1,700 employees.

• Petrochemical employees are pocketing wages that are up by an average of about 9¢/hour as a result of the 4% increases being put into effect by major oil and refining companies.

• Dewey & Almy Chemical Co. is granting its 350 hourly paid employees at Lockport, N. Y., a wage boost of 2¢/hour retroactive to June 1 with another increase of 5¢/hour scheduled for next Dec. 15. The new agreement with the United Auto Workers (CIO) also provides for rises of 10¢/hour for maintenance workers and 8¢/hour for various production classifications.

• National Carbide will raise the pay of some 200 employees at its calcium chloride plant in Calvert City, Ky., by 10¢/hour under the new 17-point pact with the United Gas, Coke & Chemical Workers (CIO). The increase is retroactive to May 11.

• Shea Chemical is hoisting wage rates by 10 to 15¢/hour for employees at Adams, Mass., under a new two-year contract with District 50, United Mine Workers. The union says its members there will continue to be better paid than employees at any other lime industry plant in the area.

• Oldbury Electro Chemical's latest wage increase of 2¢/hour means that pay rates at the Niagara Falls plant now are 32¢/hour above rates as of Jan. 1, 1950, according to District 50, UMW. Hiring rate now is $1.60, top scale is $2.23.

•

Family Squabbles: At other plants, employees resort to strikes:

• All stand-by operations at the American Cyanamid plant at Bridgeville, Pa., have been shut down, and company officials say they've given up hope of reaching settlement very soon with District 50. They emphasize that the company does not intend to abandon the plant. The 600 employees have been on strike since April 2.

• About 500 employees of Consolidated Molded Products Corp., Scranton, Pa., have struck for higher wages. By a reported vote of 203 to 99, members of the Bakelite, Laconite & Phenolic Workers (AFL) rejected the company's offer of a 5% increase.

• At Lake Charles, La., two chemical expansion projects have been interrupted by a strike of the AFL Electrical Workers. Plants affected are the Cities Service butadiene works and the Columbia-Southern plant.

• Mass picketing by AFL Chemical Workers has been keeping salaried employees from going to their jobs at Sterling-Winthrop Research Institute, near Albany, N.Y.

Aid to Educators

General Motors Corp. has dished up a new bimonthly publication—*GM Engineering Journal*—designed to lay GM technical developments before engineering college students and educators across the country. Fruit of numerous company-education confabs, the neophyte magazine is expected to be primarily of value educationally, also promises to:

• Present up-to-date articles by GM engineers on research, production, and product engineering developments in virtually every field of engineering.

• Toss in news items about GM engineering programs of interest to company personnel.

• Give added country-wide recognition to company engineers for technical achievements.

Responsible for nurture of the fledgling paper: GM's Educational Relations Section, Public Relations Dept. Editor: Arvid F. Jouppi.

Another Silencer

Scheduled to be debated in the House of Representatives this week is H.R. 116, the antifireworks bill that would further muffle the nation's traditional but dangerous Fourth of July bang (*CW, July 4*).

This bill prohibits shipment of fireworks into states in which their sale and use are illegal, with the penalty to fall on the transporter rather than the shipper. The bill has been amended to exempt common carriers (such as railroads) and freight forwarders from the penalties, but the sponsor of the measure, Rep. Marguerite Stitt Church (R., Ill.), says it would still be possible to prosecute the mail order houses, which are the real targets of the bill.

FOREIGN

Rare Metals/Canada: Production of two rare metals is slated to start this fall at Great Slave Lake, about 500 miles north of Edmonton, by Boreal Rare Metals Co., Montreal. Canadian users of the two metals—tantalum and columbium—now import most of their supply from the U.S.

•

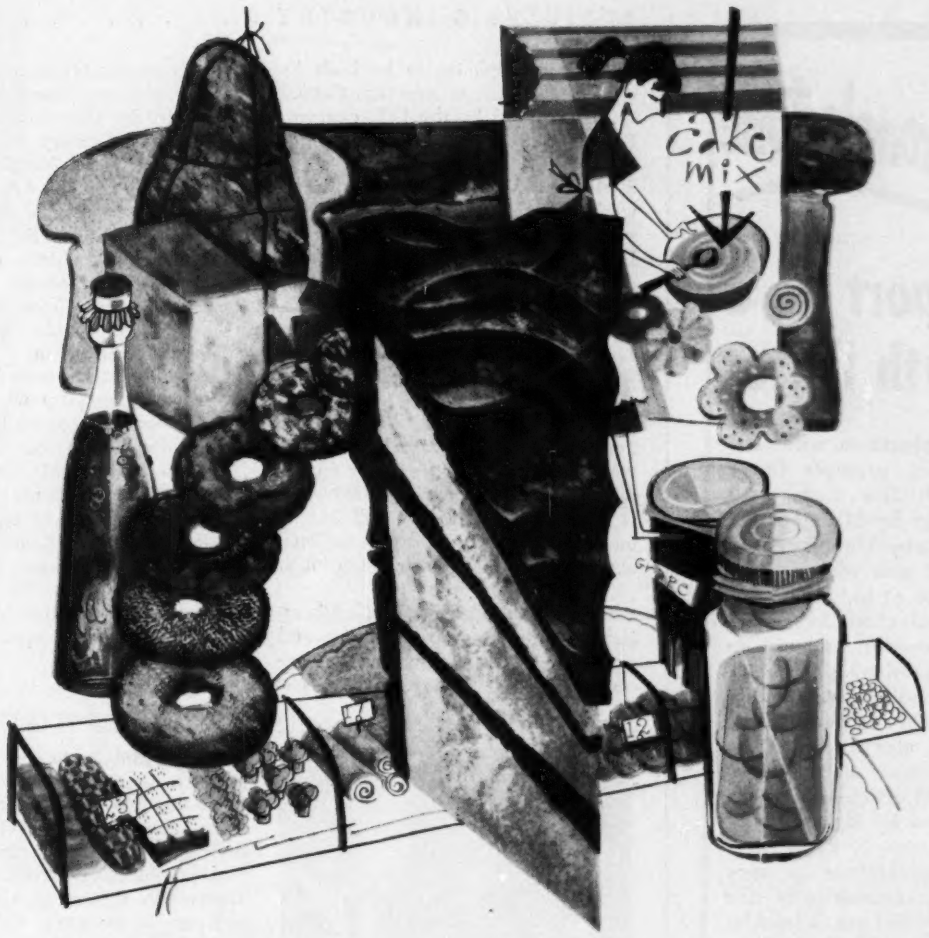
Polyvinyl Chloride/Mexico: Monsanto Mexicana, S. A., a wholly owned subsidiary of Monsanto Chemical Co., has formally opened its polyvinyl chloride resin plant at Lecheria, adjacent to Mexico City. Third in a series of operational plans (manufacture of styrene molding compound began Feb. '51; acetate molding compounds, Jan. '52), the new plant is expected to accommodate present needs and planned expansion in the polyvinyl chloride consuming industries of Mexico.

•

U.S. Investments/Turkey: The Turkish committee for the development of foreign capital investments has given formal consent to a number of agreements. They include:

• A plant for the production of DDT and other insecticides to be set up by Michigan Chemical Corp., which is providing equipment to cost $560,000; credit, $840,000.

• A plant to produce sulfuric acid



Monsanto Phosphates for Finer Foods

Food looks better . . . tastes better . . . sells better, when Monsanto phosphates are put to work.

Monsanto sodium acid pyrophosphate, for example, is an outstanding leavening agent which lengthens shelf life, improves grain and volume of cakes made with prepared mixes. Other phosphates made by Monsanto—the world's largest producer of elemental phosphorus—put the smoothness in processed cheeses, clarify sugar, furnish important dietary supplements and aid in growing yeast.

To find out more on how Monsanto Phosphates can help *your* business, write today to MONSANTO CHEMICAL COMPANY, Phosphate Division, 1700 South Second Street, St. Louis 4, Missouri.

BAKING'S MADE EASY when the housewife uses self-rising mixes containing Monsanto phosphates to improve cake grain and volume.

FROM SUGAR TO CHEESE, from yeast to biscuits, Monsanto phosphates help in the production and processing of countless important foodstuffs.

FOOD MYSTERIES SOLVED HERE . . . in this fully staffed laboratory Monsanto food technologists investigate all important phases of phosphates in foods.

MONSANTO
CHEMICALS - PLASTICS

SERVING INDUSTRY . . . WHICH SERVES MANKIND

DISTRICT SALES OFFICES:
Birmingham, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Detroit, Los Angeles, New York, Philadelphia, Portland, Ore., San Francisco, Seattle, Twin Cities. In Canada, Monsanto Canada Limited, Montreal.

and superphosphates to be built by the Fertilizer Co. of America. Capital to be provided by the U.S. concern: $800,000; credit, $1.2 million.

•

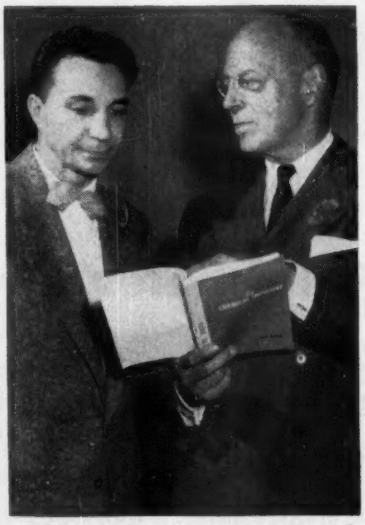
Synthetic Fibers/Germany: Farbwerke Hoechst AG, one of the largest successor companies of the former I. G. Farben chemical combine, expects to spend the bulk of this year's expansion investment for the production of synthetic fibers at Bobingen. Last year's investment quota topped 92 million marks; no figures are available as yet this year.

•

Penicillin/Norway: Production of penicillin in Norway, formerly an import item costing some £75,000/year, is now estimated to be sufficient to meet home needs. Norway's national annual requirement: 500 billion units.

•

Petrochemicals/Canada: Pacific Chemicals Ltd. reports that renovation and expansion of its petrochemical processing plant at Calgary, Alberta, has been completed.



GOING GREAT: Principal R. H. Quiggle congratulates MCA's Munson (right).

Good Word Spreads

Flushed with an auspicious start, the Manufacturing Chemists' Assn. is now planning for a second press run in mid-July of its "Facts Book" (*CW, May 30*). Already 81,000 copies have gone out to member companies (who put them in grade schools, pass them out to employees) and educators throughout the country.

Requests from school principals, guidance counselors, chemical teachers are arriving at an ever-increasing rate; over 2,000 applicants are now patiently awaiting their copies.

From educators come appreciative comments. In Cleveland, O., Hammond, Ind. (courtesy of Du Pont), and in Flint, Mich. (thanks to Wyandotte), ample supplies have been distributed, have inspired acclamation.

MCA nonmember Eli Lilly offers "compliments on a tremendous job." In Canada, American Cyanamid passed out copies. From teachers' colleges throughout the states testimonials have rolled in.

Great interest has even been shown by security analysts, who give the Facts Books to customers interested in buying chemical stocks.

In the Philadelphia area, reports Penn Salt, Facts Books have been placed in the hands of placement directors recruiting high-school students. Other uses: as textbooks in company management courses; for distribution with company literature to orient the inquirer as to the company's position in the industry.

KEY CHANGES . . .

Theodore Marvin, to president, Michigan Chemical, St. Louis, Mich.

J. Carlton Ward, Jr., to president, Vitro Chemical, New York.

Robert A. Lovett, to director, Freeport Sulphur, New York.

Wentworth Brown, to vice-president and general manager, Columbia Cellulose and Celgar Development, British Columbia.

Arnold R. Beinstein, to assistant to president, Publicker Industries, Philadelphia.

Christian H. Aall, to director of development, phosphate division, Monsanto Chemical, St. Louis.

R. H. Crist, to director of research, physical processes department, Carbide and Carbon Chemicals, New York.

P. J. Leaper, to director of research, Fels & Co., Philadelphia.

Ted A. Ruble, to manager, Continental Blacks, Ponca City, Okla.

E. W. Haley, to assistant to vice-president, Columbia-Southern Chemical, Pittsburgh.

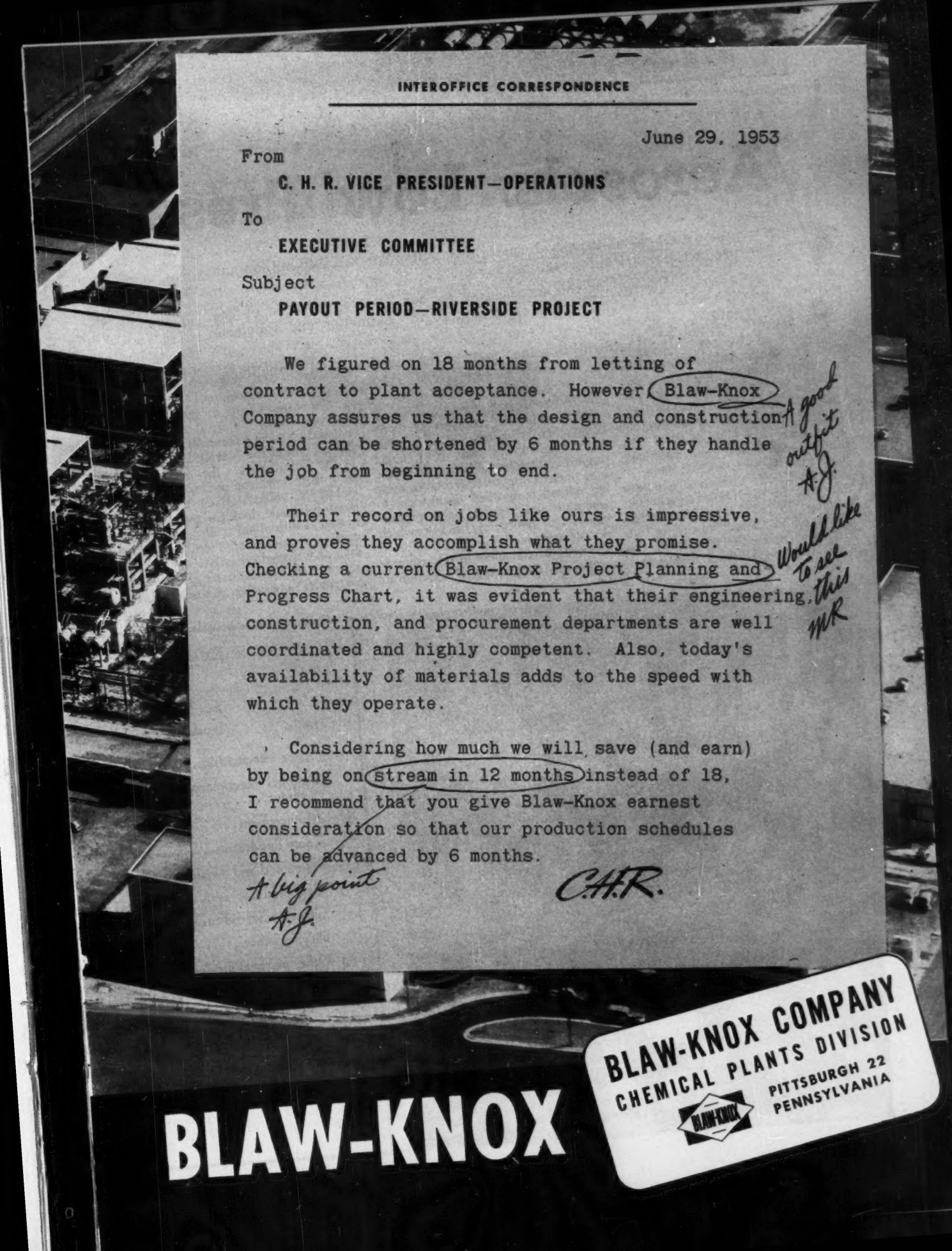
C. F. Bingham, to director of sales, Columbia-Southern.

J. Robert Bonnar, to sales manager, dyestuff division, General Dyestuffs, New York.

Robert C. Brumberger, to chemical sales manager, Nuodex Products, Elizabeth, N. J.

Arthur L. Snyder, to sales manager, textile fibers department, Carbide and Carbon Chemicals.

Robert L. Beyer, to general sales manager, Spencer Kellogg, Buffalo.



INTEROFFICE CORRESPONDENCE

June 29, 1953

From

C. H. R. VICE PRESIDENT—OPERATIONS

To

EXECUTIVE COMMITTEE

Subject

PAYOUT PERIOD—RIVERSIDE PROJECT

We figured on 18 months from letting of contract to plant acceptance. However, Blaw-Knox Company assures us that the design and construction period can be shortened by 6 months if they handle the job from beginning to end.

A good outfit
A.J.

Their record on jobs like ours is impressive, and proves they accomplish what they promise. Checking a current Blaw-Knox Project Planning and Progress Chart, it was evident that their engineering, construction, and procurement departments are well coordinated and highly competent. Also, today's availability of materials adds to the speed with which they operate.

Would like to see this MR

Considering how much we will save (and earn) by being on stream in 12 months instead of 18, I recommend that you give Blaw-Knox earnest consideration so that our production schedules can be advanced by 6 months.

A big point
A.J.

C.H.R.

BLAW-KNOX

BLAW-KNOX COMPANY
CHEMICAL PLANTS DIVISION
PITTSBURGH 22
PENNSYLVANIA

C W Report

Aerosols: Low Pressure

Aerosol-dispensed specialties will edge the 140-million-unit production mark this year.

Reason for the surge: growing consumer acceptance of the "push button" idea; rapid expansion in the cosmetics and toiletries field.

It all adds up to a lush market for chemicals and propellents, containers and valves.

Chemical specialties, cosmetics and toiletries packaged in aerosol form are like freckles on a six-year-old redhead's face. Every time you look, there seem to be a hundred more.

At least that's the way it has been this year in the pressure-packaging business. In 1951, a products survey of aerosol fillers was made for the first time (under the auspices of the Chemical Specialties Manufacturers Assn.). Nineteen companies, representing an estimated 80% of production, cooperated in this effort to get an accurate view of the size of the new industry, reported a total of some 34 million units filled (equivalent to about 41 million for 100% production). The survey for 1952, in which 31 companies—filling practically all the aerosol containers in this country and Canada—participated, showed an astounding zoom to over 96 million.

And one of the best informed men in the industry puts the number of aerosols that will be packed this year at 125-135 million. Others, somewhat more optimistic, look for the total to exceed 140 million (all figures, of course, exclusive of food products such as whipped cream).

Currently there's quite a roster of companies operating aerosol filling

Type Container→ Product	
Space insecticides	
Residual insecticides: roach, ant, etc., sprays	
Mothproofers	
Room deodorants	
Pigmented and metallic paints	
Clear plastic sprays	
Other household products	
Shaving lather	
Other personal products	
Miscellaneous products	
TOTAL	

Hits High Volume

plants (*see table, p. 38*) and the number of brand names on the market has grown in almost geometric progression. Reason: this industry, perhaps more than any other, has been characterized by the private-label filler who may package for a dozen firms. This was especially true in the first years of the low-pressure aerosol boom; however, in the past year or so there has been a trend away from such practice as larger companies (in particular) have put in their own filling units.

But whether you put this year's output at 125 million or at 150 million, either figure is ample evidence that the public has accepted aerosol as desirable products. With some products and some people, it is because the convenience of dispensing a product by merely pressing a button is worth the extra price over such a product packaged in a bottle or can. With others, it is because the aerosol form of the product works better than the same product dispensed in another fashion.

How Aerosols Work

Aerosols got their start during World War II as a result of the U.S. Dept. of Agriculture discovery that small amounts of insecticides dispensed as very fine particles by means of propellent gases were very effective against flying insects. This work, covered by U.S. Patent 2,321,023 assigned to the Secretary of Agriculture, led to the development of the heavy aerosol insecticide dispenser familiar to all who were in the armed services or who frequent war-surplus stores. Some 50 million of these were produced during the war.

These early insecticides, expelled from the heavy "bombs," were true aerosols—i.e., they were in the form of very fine particles dispersed in air. Some of the products on the market today—notably insecticides and room deodorants—fall into this aerosol class too, but the term "aerosol" as now used in the trade includes two other general types: (a) wet sprays for surface coating applications, (b) foam products.

True aerosols, as exemplified by space sprays, contain a solution of an active ingredient and propellent in a closed container equipped with a valve and standpipe. Part of the propellent, loaded under refrigeration as a liquefied gas, remains in solution,

NUMBER OF AEROSOL AND PRESSURIZED PRODUCTS PRODUCED

High Pressure		Twelve Ounce		Six Ounce and Less		Total	
1951	1952	1951	1952	1951	1952	1951	1952
656,599	610,349	17,169,727.	29,456,906	676,926	2,060,568	18,503,252	31,517,474
		1,183,164	1,473,178		276,312	1,183,164	1,749,490
		964,836	1,940,410		21,931	964,836	1,962,341
		4,231,505	6,950,386	4,512,666	5,459,882	8,743,171	12,410,268
		2,092,478	4,344,035	44,311	143,373	2,136,789	4,487,408
		1,142,625	2,219,556		14,915	1,142,625	2,234,471
		262,544	1,951,897		1,147,971	262,544	3,099,868
		a	3,171,976		13,510,402		16,682,378
		1,251,679.	2,245,658	3,127,597	6,521,151	4,379,276	8,766,809
		2,275,550	9,685,013	1,297,452	3,413,036	3,573,002	13,098,049
656,599	610,349	30,574,108	63,439,015	9,658,951	32,569,541	40,889,659	96,618,905

Note: This table based on Chemical Specialties Manufacturers Assn. surveys of the number of units packed in 1951 and 1952. The CSMA 1951 survey covered 19 companies estimated to have packed 80% of the total volume; figures for 1951 in this table (high pressure units excepted) have been adjusted to give the approximate number packed in all categories if all manufacturers had participated in the survey. For 1952, 31 companies responded and the CSMA figures are estimated to include virtually all cans packed. Government contracts are included for both years. Food products are excluded.

(a) In the 1951 survey, shaving lather was not reported as a separate category but included with other personal products.

C W Report

but the rest, in gaseous form, fills the head space of the container.

When the valve is opened, the vapor pressure of the propellent in the upper part of the can pushes the solution of propellent and active ingredient up the standpipe, through the valve and out the discharge nozzle. Upon release of the material, the dissolved propellent instantly becomes a gas and essentially shatters the active ingredient into very fine particles (under 20 microns in diameter), which remain in suspension for prolonged periods. Thus the insecticide or room deodorant is effective for a long period, gives excellent mileage out of a given quantity of material.

The other two types of "aerosols" among products now being sold—surfasols (surface-coating sprays) and foams—work very much like the space spray. In the case of the former, less propellent is used, and the whole system operates at lower pressure. Moreover, some of the products (paint, for example) may have the active ingredients suspended in the formula rather than dissolved. The material being dispensed, of course, is of much larger particle size than that of a space spray, and can be directed at the object to be coated.

Foam products, also operating on the same general principle, require even less propellent, although they are under higher pressure as a rule (pressure being dependent upon the vapor pressure of the propellent gas used more than on the quantity of propellent in the formula). Active ingredient is emulsified with the propellent, and as the emulsion exits from the nozzle of the container, the propellent particles in the emulsion rapidly expand, turning the formulation (shampooing or shaving, etc.) into a lather of minute bubbles. They may be dispensed either from a container equipped with a standpipe or from one that has no standpipe and must be inverted to allow the emulsion to be forced out of the valve.

Lowering the Pressure

The formula developed for the wartime insecticide use employed Du Pont's Freon 12 propellent, dichlorodifluoromethane; this had a pressure of 70 lbs./sq. in. gauge at 70 F and required the familiar, heavy, cast-iron "bomb." It was apparent after the war that effective though such a product was, the container was too expensive to achieve wide consumer acceptance.

Work indicated that the propellent could be mixed with other gases to give propellent mixtures of lower pressure that would dispense an insecticide meeting the USDA's standards regarding particle size suitable for maximum efficiency. The Interstate Commerce Commission, which has jurisdiction over shipment of dangerous articles, modified its regulations accordingly, permitting use of the inexpensive "beer can" now commonly identified with aerosols. (Packaging a liquefied or compressed gas, defined in ICC regulations as one exerting a total pressure exceeding 25 lbs./sq. in. gauge at 70 F, is subject to regulation.) This modification exempted from specification packaging, marking and labeling requirements products complying with these stipulations:

- The container is a nonrefillable metal container charged with a solution of materials and compressed gas or gases that is nonpoisonous and nonflammable.
- Capacity doesn't exceed 16.6 fluid oz.
- Pressure in container doesn't exceed 40 lbs./sq. in. gauge at 70 F.
- Liquid content of the material and gas must not completely fill the container at 130 F.
- Prior to shipment, each container is heated to 130 F without evidence of leakage, distortion or other defect.

This change was a go-ahead signal for industry, and output of the new low-pressure aerosols began, with first substantial production in late 1947-early 1948. Air deodorants soon took their place alongside of insecticides as common household items. Other products were added in rapid sucession until now there are about 40 different aerosol items on the market.

Regulations Affecting Aerosols

Even today, with so many products being made and shipped in such large volume, many manufacturers, eyeing aerosols as a way to expand sales, do not understand the various governmental regulations that apply to aerosol products.

As has been mentioned, the ICC regulates shipments of compressed or liquefied gases exceeding 25 lbs./sq. in. gauge at 70 F, provided the package is over 4 fluid oz. And the section of ICC regulations (Tariff No. 8, Section 73.302-3) applying to low-pressure aerosols (25-40 lbs./sq. in. gauge at 70 F) has been briefly summarized. Most of the aerosols now packaged—an estimated 75%—fall in this category.

In addition, there are sections affecting foodstuffs, soaps or cosmetics (Section 73.302-5, Tariff No. 8); medium-pressure (40-60 lbs./sq. in. gauge) aerosols (Section 78.33, Tariff No. 8); and, naturally, products having pressures over 60 lbs./sq. in. gauge—the original high-pressure containers.

The section on foodstuffs, etc., is of special interest to those packaging foam products; it lists the conditions under which such containers are exempt from specification packaging, marking and labeling requirements. That dealing with medium-pressure aerosols covers shipping requirements, including labeling, and calls for metal containers meeting ICC specification 2P. This specification 2P container is one with special heavy walls designed to withstand the higher pressure. Two high-pressure containers—ICC 9 and ICC 40 cylinders—are specified for products in the 60 lbs./sq. in. gauge-plus range.

Special for Insecticides: Insecticides, still the largest sellers by far, are licensed by the USDA under the patent it holds. Formulas for household aerosol insecticides are evaluated on the basis of particle size and entomological effectiveness, and appraised as to the health hazard of their components. Moreover, since such products come within the purview of the Federal Insecticide, Fungicide & Rodenticide Act, they must also be registered with the Production & Marketing Administration of the USDA.

Other government agencies such as the Food & Drug Administration, U.S. Public Health Service, and the Federal Trade Commission have no regulations designed especially for aerosols. But often the USDA may consult with FDA and PHS on problems relating to the aerosol field, and of course, types of products and such questions as toxicity and safety that would come under the jurisdiction of any agency are no less its concern just because an aerosol is involved.

A number of firms have been cited by the FTC for light fill, and members of the industry have been particularly concerned lest some fly-by-nighters give the whole industry a black eye. The problem in the case of aerosols is obviously more serious than in the case of a bottled insecticide, for example, where the consumer can see how much he gets for his money; for when he buys a 12-oz.

CHEMICAL PROCESS NEWS

PUBLISHED BY CHEMICAL PROCESS DIVISION, THE M. W. KELLOGG COMPANY JULY 1953

NOTES ON

UREA

As was announced recently, Kellogg is now in a position to make available a new, low-cost method of producing synthetic urea of exceptional purity from ammonia and carbon dioxide.

***

Known as the Montecatini Urea Process — after the well-known Italian firm which developed it— the new method reflects more than thirty years experience in the field of nitrogen chemistry.

***

Most recent development in the process now being offered calls for the partial recycle of tail gas. With this practice 70% of the ammonia and 80% of the carbon dioxide are converted to urea. The remaining 30% of the ammonia may readily be converted to fertilizer.

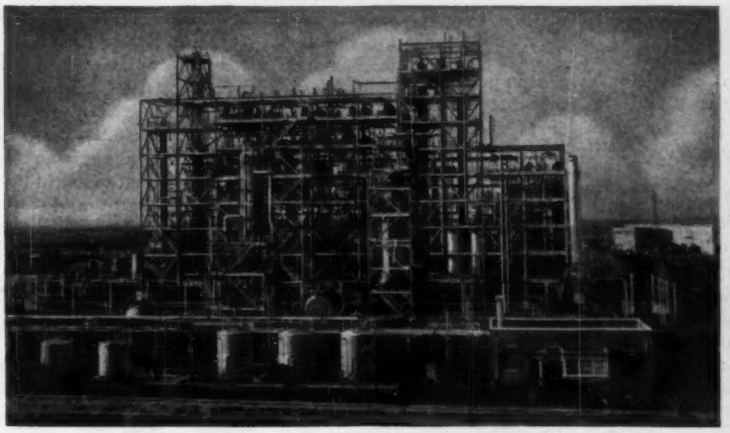
Capital Investment Lowered in Phthalic Anhydride Plants

Several design improvements which lower capital investment are being incorporated in new Fluid phthalic anhydride plants now underway for two major chemical companies abroad.

Most important is a re-design of the condensing system which not only reduces capital investment but also improves operating conditions. For example, it precludes any need for operators to come in direct contact with the phthalic or its fumes.

When completed the two new plants will produce about 50 million pounds of phthalic annually.

Meanwhile Kellogg's lab has developed a new feed-preparation step which permits the use of low-grade, sulfur-containing naphthalenes in the Fluid process. The step assures the processor of the higher yields possible with the fluidized catalyst system as well as its other advantages: lower initial cost... easier handling of catalyst... longer catalyst life... and increased safety through better control of heat.



Greatly Reduced Coking and Improved Yields in Kellogg's Unique Ethylene Process

Commercial operating reports from an ethylene plant in England that Kellogg designed and erected continue to show remarkably low coke formation despite high conversion. It employs a unique pyrolysis step, a product of Kellogg's laboratory.

Whereas conventional ethylene pyrolysis furnaces usually average only a few weeks on-stream before being shut down for coke removal, this plant showed only slight coke deposits when inspected after 12 months continuous operation. During this period it was operated with sufficient severity to convert 55 to 60 wt. % of the naphtha to C-4's and lighter gaseous products.

The special Kellogg-designed fractionation system which purifies the ethylene has also proved highly efficient. This is demonstrated by the fact that it produces 99.94% pure ethylene, while recovering 95% of the total ethylene.

From an operating cost standpoint, a special design in the quenching system, which follows the pyrolysis step, plus the use of low-level heat by the absorption refrigeration system, provide major savings by recovering most of the heat used in cracking.

New Pyrolysis Method Adaptable to Ethane

Meanwhile continuing pilot plant studies are being carried out in the Kellogg labs on using various adaptations of this pyrolysis process to produce high purity ethylene from ethane, propane and other feed stocks. Test runs indicate that the Kellogg method will produce higher yields of ethylene and less coke than conventional processes.

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aerosol container he has to rely on the integrity of the manufacturer to get 12 oz. of material in the can; there's no way of opening it to find out.

Self-Policing: The Commercial Practices Committee of the CSMA has drawn up recommended minimum fills for insecticides, room deodorants and artificial snow, and the Aerosol Div. of the CSMA has adopted them. In general, these call for not less than 6 oz. and 12 oz. avoirdupois of these products in the common 6- and 12-fluid-oz. cans used for such products. It is hoped that this attempt at self-policing will keep fillers and vendors from running afoul of the FTC. As part of the program, other products will be added to this list of minimum fill recommendations.

In addition to federal agencies, states and cities may also regulate labeling of aerosols in regard to hazards that they may feel exist in connection with their use. The matter of flammability of some kinds of products has been in dispute for some time, and CSMA's Aerosol Div., with the cooperation of the Bureau of Explosives, has developed test methods that are considered realistic evaluations of aerosols. It is expected that these methods will be widely adopted, will be the answer to difficulties that have arisen in the past.

These test methods and recommendations on minimum fills are being brought together along with other recommendations in a CSMA manual for aerosol fillers and sellers. When that volume comes off press, it —along with the Association's "Agencies and Regulations"—will form a good primer for anyone desiring to enter the business, and a good reference for anyone already in it.

Contract Filling the Keystone

It is pretty clear that manufacturing aerosol products is a rather specialized business calling for equipment to handle compressed gases and to test finished products, and a thorough knowledge of regulations designed to insure safety in their manufacture, shipment and use. For this reason, the tremendous expansion of the industry has been largely carried out by private-label fillers who have become experts in this type of product and have turned out many different aerosols for many companies.

Actually there are several variations of the private-label manufacturer in this business: contract loader, custom loader, or a combination of the two. In contract filling, all materials—cans, valves, active ingredient, propellent—are supplied by the customer and the filler merely loads the container and ships it out. The filler gets just his fee —usually 5¢ a can, although this is often shaded on large orders of standard products. In custom filling, the loader supplies all the materials in turning out the product; the price depends upon the particular product and the volume of the order.

Some fillers operate on only one basis or the other, while others make any arrangement the customer wishes, including the combination deal in which one or more, but not all, of the components are supplied by the filler.

Contract fillers differ from each other in one other principal respect: some have products under their own labels (or what amounts to the same thing, a close tie with a merchandising organization) while others eschew any activity but manufacturing. The latter is a good selling point in shooting for more business, and these outfits make much of not competing with their own customers.

Although most of the low-pressure aerosol fillers will tackle any job their lab or another company's laboratory has proved feasible, some specialize in one phase or another. Quite often a manufacturer turning out, say, cosmetics, will refuse to take on products of a different character—paints, for example. It isn't that he may not be able to handle the product; he merely has enough of his specialty to keep busy without introducing a new material into his line that will require considerable cleaning up before he can get back to his bread-and-butter interest. Other fillers, with a number of lines operating on different kinds of materials, might under the same conditions not hesitate to take an order for paint.

Filling the Valleys: Those loaders who have been in the game since the early days of the low-pressure aerosol naturally started turning out insecticides. But it was a seasonal business, and their desire to eliminate the sales valleys of the off-seasons led them to look around for products with year-round demand. In this search they were not only instrumental in introducing many new products, but as new ones came along, they also launched companies with established specialties lines and outlets in the aerosol business.

These aggressive merchandising organizations boosted acceptance of the aerosol principle. However, some of the companies that started out by having someone fill their aerosols for them, are now operating their own filling plants. And others just coming into the field are doing it on their own instead of going to a filler.

In the list of aerosol fillers (page 38), it is estimated that these seven filled 75% of the units last year (in alphabetical order): Aeropak, Geo. Barr, Boyle-Midway, Bridgeport Brass, Carter Products, Connecticut Chemical Research, and Continental Filling.

From this, it is fairly clear that the contract filler is still king, for among those companies, only Boyle-Midway and Carter do not package for others. Boyle-Midway has had a number of aerosol products since the early days, but it was not until 1951 that it began to fill its own. Carter always aimed to fill its own Rise shaving lather, although at some periods it has had some of its units filled on the outside.

But among other plants operating or about to, these firms are or will be filling for themselves: Barbasol, Campbell Products, Colgate, Plasti-Kote, Rayette, Shulton, Zonite. While not all of these names may strike a responsive chord, some are big names, representing a lot of lost potential business to private-label people. And more important, the latter are also losing other accounts with volumes seemingly too small to justify installation of their own lines.

It is difficult to say at just what point it is more profitable for a manufacturer to put in his own line rather than have his material filled for him. Much depends upon the volume of his operation and the type of product or products he sells.

A firm like Boyle-Midway, a long-time big factor in specialties, with a variety of products—insecticides, air deodorants, aerosol shaves—can easily do it and keep its production facilities busy all the time. Likewise, Colgate would have no problem operating at continuously high volume on only one product—shave cream.

On the other hand, the major petroleum companies, which are responsible for moving a good percentage of aerosol insecticides, have almost annually considered going into the packing end themselves. And just as regularly they have rejected the idea. The reason is clear: business is seasonal, and the facilities aren't good for anything else in which they have a vital interest.

For smaller companies putting in their own units, the reasons aren't so easy to pinpoint. One may have a

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novel ingredient or formulation and not be inclined to let anyone in on the secret. Another may have an entirely new product it wants to be ready to move on before its competitors can get into the act. More likely, however, the company feels it can do the job more cheaply itself.

How Aerosols are Filled

Part of this trend toward self-packaging can be attributed, more or less, to the resurgence of pressure filling—the method used to pack the original high-pressure product—as contrasted to cold filling—the method by which most of the products on the market are manufactured. Pressure filling, as the name implies, involves filling with pressurized equipment at room temperature. With cold fill, refrigeration equipment cools the propellent so that it can be handled as a liquid.

The difference in capital investment required for a refrigeration system is one of the principal incentives for self-filling—with relatively inexpensive gasifiers—the mechanism for introducing propellent through the valve into the can. Here again it is hard to generalize, for most installations are designed to fit a particular company's operation and vary according to what product or products it fills, how much mechanization it wants, how much accessory equipment is needed, etc.

Majonnier-Dawson Co. (Franklin Park, Ill.), which installs both types, says a line can run anywhere from $5,000 to $30,000. A semiautomatic unit could pack 15-20 cans a minute; an automatic, 30-120. Alpha Engineering and Machine Works (Chicago) also sells both types of installations, gives these rough figures: for a 60-per-minute cold fill, including refrigeration, $25,000-30,000; for a pressure fill of same capacity, about $20,000. It, too, points out that a hand-operated table model filling 10-15 cans/minute can put an outfit in the business for $4,000-10,000.

The only other company closely identified with aerosol filling equipment (other than companies that may do their own engineering and install their own setups) is Oil Equipment Laboratories (Elizabeth, N.J.). Oil Equipment has developed a valve and mechanism suitable for pressure filling, will lease the filling machine or sell it (for "less than $5,000").

Pro and Con: Aside from the consideration of investment, there are many arguments as to the relative merits of cold and pressure filling. Proponents of the former cite the higher rate of production generally possible with that method, since the propellent is shot right into the can—not forced through the valve. Also, all air and vapor are expelled from the can by the evaporation of a small amount of propellent between the time the can is filled and when the top (or bottom) is crimped into place. This is very important since air not only promotes corrosion, but also may increase the pressure in the container beyond the safe range.

Cold fill adherents also claim that pressure-filling machines do not evacuate air from the containers, that they permit excessive loss of expensive propellents, and that the fill is not sufficiently accurate.

On the other side of the ledger is the big limitation on cold filling: it can't be used for cold-sensitive materials such as the now booming shave creams, which have the active ingredient in emulsified form. Pressure filling is the only way to package such products in aerosol containers. Other products such as these that become very viscous or solid at low temperatures are also "out" for cold fill, "in" for pressure. (The big contract fillers, most of whom have long employed cold fill for their general lines, naturally have added pressure facilities to accommodate such products.)

Moreover, equipment now being offered may have an air-evacuation stage incorporated for products in which air is deemed critical—in the case of space sprays, for example, where the percentage of "active" is low compared with the propellent. And the gas loss is claimed to be no more or less than that occurring in cold filling when the propellent evaporates from the can; the accuracy of fill is claimed to be as great.

More Than Packing in a Can

But whether the product is filled by a private-label filler, packaged by a manufacturer himself, filled by pressure or by the refrigerated method, turning out an aerosol is much more than just sticking a proved conventional formula in a can with a compressed gas to shoot it out when the button is pressed. A good product requires a careful selection of active ingredient, propellent mixture, container and valve.

Established aerosol loaders and suppliers of active ingredients, propellents, containers and valves all have accumulated a great deal of data on formulations, and most of them maintain technical service laboratories to work on a prospective customer's proposed product if they do not already have the answer for him. The USDA, too, is a reservoir of aerosol information—especially on insecticides.

A general developmental program involves filling a small number of cans for shelf testing, to determine whether the container or valve corrodes, whether any of the materials hydrolyze or whether side reactions occur that may result in corrosion of parts or build-up of unduly high pressures, etc. Compatibility of various materials with propellents, and the effect of formulations on on parts of the container can be visually checked by filling glass pressure vessels with different mixtures, and by inserting strips of the container, valve parts, etc. in such bottles so that they are in contact with both the liquid and gaseous phases of the formulation.

The formulations must also be tested for pressures, flammability, spray characteristics with different valves, and for general efficiency in the use for which the product is intended.

All this work can be done for the prospective aerosol vendor, or he can rather simply install experimental filling and testing equipment in his own laboratory.

The Big Push: The chemicals that have made the whole aerosol development possible, and that provide the chemical industry with its biggest volume stake in the business, are the fluorinated hydrocarbon propellents. These are manufactured by Du Pont (at Carney's Point, N.J., and East Chicago, Ill.) and sold under its Freon tradename, and by General Chemical (at Baton Rouge, La.)—its Genetron propellents.

These materials are safe for use in aerosols because they are nonflammable, non-explosive, non-irritating, colorless, essentially odorless, and exhibit a low order of toxicity. Using different compounds or varying mixtures of these products, a formulator has at his disposal propellents with a wide range of pressure for different applications.

Of a large number of propellents these companies make or can make, only a few are of much importance in the aerosol field at this time. Those with the widest application are trichloromonofluoromethane (Freon 11 and Genetron 11) and dichlorodifluoromethane (Freon 12 and Genetron 12), a 50:50 mixture of which supplies approximately two-thirds of

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the aerosol propellent business. This mixture, in which the "11" is a pressure diluent for the "12," is used in insecticidal space sprays, hair lacquers, coating materials, room deodorants, etc. Its price is about 22¢/lb.

Perhaps next most widely used is dichlorodifluoromethane alone, for which paints are the primary outlet. It also finds application in some foam products, in suntan oils and in household all-purpose oil. Price is approximately 26¢/lb.

Both General and Du Pont have other standard and special propellents. Du Pont's Freon 114, dichlorotetrafluorethane, mixed with Freon 12 in varying proportions (40:60 to 60:40) has its biggest use in shave foams. And among its "specials" are Freon 21 (dichloromonofluoromethane), Freon 22 (monochlorodifluoromethane) and Freon 113 (trichlorotrifluoroethane); they find application, respectively, where high stability and high solubility in acid or neutral mediums are required; where special solubility characteristics and higher pressures are needed; and when oxygen-containing products, calling for greater solvency, are present.

General's 1,1,1-difluorochloroethane (Genetron 101) is a material of lower pressure than the 11/12 mix, exhibits no skin-irritating properties, and finds use in such applications as underarm deodorants and perfumes. The special propellent mix, Genetron 102J, is noteworthy for its solvency, goes into paints and lacquers and "snow" products; Genetron 102P, of higher pressure, is a mix designed for paints and lacquers.

These are the principal propellents on the market today with the exception of methylene chloride. A few formulators use this to replace entirely or in part the "11" compound in the common 50:50 11/12 mix as the pressure diluent. It is a cheaper material, but it is used in some cases more because it is a good solvent for DDT and methoxychlor than because it is less costly. Objections to its use are that it is more toxic than the standard propellents, and that, because it is such a good solvent, aerosols using it have been responsible for damage to finishes, plastic curtains, etc., when carelessly sprayed.

Companies Filling Aerosols and/or Building Filling Units
(only low pressure unless otherwise indicated)

Company	Plant Location	Remarks
Aeropak, Inc. (DeMert & Dougherty)	Chicago, Ill.	General line; specialize in paints.
Aerosol Co., Inc.	Neodesha, Kans.	General line; also high pressure.
American Aerosol Insecticide Corp.	Holland, Mich.	H.p. only for Army, Navy "surplus" trade, etc. and for export.
Amer. Potash & Chemical (Eston Chemicals Div.)	Los Angeles, Calif.	Various products.
Babasol Co.	Indianapolis, Ind.	New shave cream unit.
Geo. Barr & Co.	Chicago, Ill.	Specializes in cosmetics; just doubled capacity.
Boyle-Midway, Inc.	Cranford, N.J. Chicago, Ill.	Fill own Aero-Shave and other Aero brand products.
Bridgeport Brass Co.	Bridgeport, Conn.	General line including h.p.
Campbell Products	Bensonville, Ill.	Shave-Whip shave cream only.
Cardell Enterprises	Toronto	General line; biggest in Canada and building at new location (Brighton, Ont.); subsidiary (Aerocide Dispensers) packs h.p.
Carter Products, Inc.	New Brunswick, N.J.	Only package own Rise shave cream.
Chase Products Co.	Maywood, Ill.	General line; building new plant.
Chemi-Form Corp.	Chicago, Ill.	General line but specialize in cosmetics.
Clair Manufacturing Co.	Chicago, Ill.	Installation in about six months.
Colgate-Palmolive-Peet Co.	Jeffersonville, Ind.	Line for own Rapid-Shave just installed.
Connecticut Chemical Research Corp.	Bridgeport, Conn.	General line.
Conn. Chem. Res. Corp. of Canada	Toronto	General line.
Continental Filling Corp.	Danville, Ill. Hobart, Ind.	General line.
Eveready Pressurized Products, Inc.	Cleveland, O.	Specialize in paint.
Fluid Chemical Co., Inc.	Newark, N.J.	General line.
Hampton Products Co.	Portland, Pa.	Succeeded Woodlets, Inc.; emphasis on specialty products.
Knapp-Monarch Co.	St. Louis, Mo.	Discontinued filling own l.p. line; still fill h.p.
Larson Laboratories	Erie, Pa.	Own personal products line.
National Tea Co.	Chicago, Ill.	H.p. for use in own stores.
Par Industries	Los Angeles, Calif.	Plant replacing burned-out installation just going in; specializes in paint.
Pennsylvania Engineering Co.	Philadelphia, Pa.	Fill h.p. only.
Plasti-Kote, Inc.	Cleveland, O.	Big in paint.
Plaze, Inc.	St. Louis, Mo.	Specialize in foam products.
Powr-Pak, Inc.	Bridgeport, Conn.	At new location in expanded operation; general line.
Protective Coatings Corp.	Des Plaines, Ill.	Strong in paints but broadening line.
Puritan Distributing Co.	Boston, Mass.	General line.
Regal Chemical Corp.	Brooklyn, N.Y.	General line.
Rayette, Inc.	St. Paul, Minn.	Just recently started to fill own hair lacquer.
Ronor Manufacturing Co. (Engine Parts Mfg. Co.)	Cleveland, O.	General line.
Shulton, Inc.	Clifton, N.J.	Recently began filling for self.
Sprayon Products Co.	Cleveland, O.	Specialize in paint.
Stalfort Pressure-Pak, Inc.	Baltimore, Md.	General line; just doubling capacity.
Virginia Smelting Co.	West Norfolk, Va.	Biggest of those filling only h.p.
G. M. Watson & Co.	Toronto	Emphasis on noncosmetic specialties.
Zonite Products Corp.	New Brunswick, N.J.	Filling only own Larvex product in new glass container.

Note: Most of these companies do contract filling of products to be sold under other companies' labels. Some of these contract fillers, however, also sell similar products under their own labels.

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valves for aerosols has become a profitable line for established companies and a new business venture for the few that specialize in their fabrication. They are of two general types: for foam products, selling in the 5-6¢ range; for other types of products, the majority of which go for 6-9¢.

Among companies making foam valves are: Clayton Pressure Products (St. Louis); Dairy Whipt (Chicago); Oil Equipment (Elizabeth, N.J.); Precision Valve (Yonkers, N.Y.); Pressure-Pak (Detroit); Valve Corp. of America (Bridgeport). Makers of other types (not all of which can be pressure filled) include: Aerosol Research (Chicago); Bridgeport Brass (Bridgeport, Conn.); Dill Mfg. Co. (Cleveland); Paul Engstrum (Philadelphia); Precision; Pressure-Pak; Risdon Mfg. Co. (Naugatuck, Conn.); A. Schrader's Son (Brooklyn); Seaquist Mfg. Co. (Cary, Ill.); VCA; and Viking Valve (Minneapolis).

With volume going over the 100 million mark, there's a big stake for container suppliers in this field, too. American Can, Continental Can and Crown Can all supply the 6-oz. and 12-oz. cans. Price averages a fraction over 4¢ for the 12-oz., depending on the particular lining desired.

Aluminum containers have been available in smaller sizes off and on for some years. Supply has been a problem, and there have been some difficulties with corrosion. Victor Industries (Brooklyn) and Wirz Inc. (Chester, Pa.) are among those in the business. Applications are pretty much restricted to cosmetics on account of price: Victor's 2-oz., for example, runs $77/1,000.

Glass Containers: The latest thing in aerosol containers is glass. Zonite Products is now filling its well-known Larvex silicofluoride mothproofer in a patented glass bottle (*CW, Jan. 31*). It's enclosed in a fiber tube with metal ends (made by American Can) as a safety measure. Zonite is licensing this very low-pressure system to other companies, and it is expected that other formulations too corrosive for existing containers may thus ride the aerosol bandwagon.

Another approach is Wheaton Plastics' (May's Landing, N.J.) plastic-coated glass container (*CW, May 23*). This, too, will be for very low-pressure systems (about 6 lbs./sq. in. gauge). It will run about 10¢ for large lots of the 2-oz. size, 13¢ for the 4-oz.; and will be made both as a round and pinch bottle. No product has yet been packaged in this container, and it is understood that some of the prospective customers are now considering using an uncoated bottle.

Market Still Growing

Aside from the market for propellents, containers and valves, aerosols represent a big outlet for specialty formulations that form the "active" in the package. It is difficult to put an exact dollar figure on the amounts of insecticides, coatings, perfumes, waxes, detergents, soaps, solvents, etc., sold to the field, since formulations vary and many are closely held secrets, but it is big enough for all companies to court the field.

A cost breakdown for a few leading items will at least show the cents represented by each can of that particular formulation:

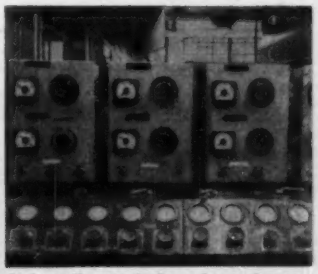
- 12-oz. insecticide (85% propellent–15% active): can, 4¢; valve, 7¢; gas, 16¢; concentrate, 17¢; filling, 5¢; carton, 1¢; essential oil, 0.6¢. Total: 50.6¢.
- 6-oz. room deodorant (90% propellent–10% active): can, 4¢; valve, 7¢; gas, 8.4¢; concentrate, 3¢; filling, 5¢; carton, 1¢. Total: 28.4¢.
- 6-oz. shave cream: (10% propellent–90% active): can, 4¢; valve, 7¢; gas, 2¢; concentrate, 3¢; filling, 5¢; carton, 1¢; essential oil, 0.3¢. Total: 22.3¢.

That's just a rough idea of the raw material cost, since the price of the concentrate in an air deodorant and of the emulsion going into a shave cream will vary widely with the brand. But start multiplying these average amounts by the number of units being sold, and you get a healthy piece of business.

And it's still growing at a rapid rate. Du Pont, which has conducted surveys of aerosols among consumers and retail outlets for the past six years, has found greater consumer acceptance, greater stocking by dealers each year. The CSMA surveys certainly bear this out.

Widespread adoption by the cosmetics and toiletries fields is expected to build the market still further, and rapid growth is now being registered by such products as shave creams and hair lacquers, with hand lotions just coming on the market. And the new glass containers should beckon materials that can't be packaged in existing packages. But the market for the "standards" is far from sated, and they, too, can be expected to swell the total still further.

Block-long Fourdriniers sitting side by side turn out an endless strip of kraft 24 hours per day, 7 days per week, 365 days per year. At "wet end" above, kraft is 96% water, 4% pulp. Scene is at modern Florida mill where Hudson Multiwall Sacks are made.



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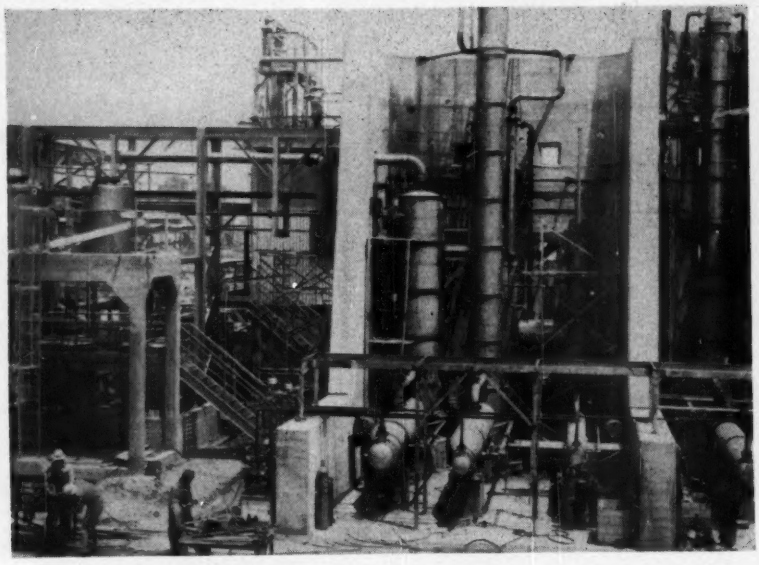

LAKE CHARLES HYDRAZINE PLANT: Fast-moving entry in a new stable.

Tougher Than it Looks

Mathieson this week brings in its new $3-million hydrazine plant, shoots for full production by the end of the month.

It will employ a modified Raschig process and hopes that the price can eventually be pared to 50¢/lb.

And if the price is right, there are a raft of industrial uses awaiting commercial quantities of hydrazine.

Taming wild horses and obstreperous chemicals—unlike most pleasures—gives more joy in the reflection than in anticipation. And officials of Mathieson Chemical are having a whale of a time reflecting on the taming of hydrazine this week as they bring in their new $3-million Lake Charles (La.) hydrazine plant. It's an accomplishment they've been anticipating five years.

Although hydrazine is not a new chemical* it has never before been produced on a commercial scale in this country. Present modest production is accounted for by two firms, Fairmount Chemical, which quadrupled its output last October, and Mathieson, which has been turning it out in two pilot plants in Niagara Falls. A third firm, Olin Industries, while not yet a producer, has made some significant contributions to processing techniques.

Mathieson, even with "pilot" scale production has been generally conceded to be the bigger producer. But Fairmount, which has been making a hydrazine hydrate since 1940, easily qualifies as the pioneer.

Only Part of It: Because hydrazine is an important ingredient of rocket fuels, both Fairmount and Mathieson were able to get fast write-offs on 90% of the cost of their new facilities. And by the same token, production figures are a carefully guarded secret. Mathieson, however, makes it clear that it doesn't expect all of the output to go to the military.

Located near the center of the natural gas country, the plant should have no trouble in meeting the steam requirements necessary for the production of hydrazine. At Lake Charles, too, it will have captive sources for caustic and ammonia, two of the raw materials. For the third, chlorine, it will have to go elsewhere, since the Lake Charles caustic is made by the lime-soda process. One possible source of supply is the firm's nearby chlorine plant at McIntosh (Ala.).

Cutting the Costs: As one would expect, the increased production will help to slash the price of hydrazine considerably. During World War II, hydrazine hydrate sold (on a hydrazine basis) for $50/lb. This was cut to $9/lb. in 1949 and to $2.50/lb. this year. Mathieson is looking forward to the possibility of process improvements which may bring the price down to $0.50/lb.

Meanwhile Fairmount is also lowering its prices. To keep in step with Mathieson, it declared a 40% price slash earlier this year. It has since dropped them again to $3, $1.76 and $1.35 a pound (on an "as is" basis) for 94%, 64% and 54.4% hydrazine, respectively. Last week, however, on the heels of a price increase for one of its raw materials, chlorine, Fairmount hiked its prices to $3.25, $1.90 and $1.50 a pound.

MATHIESON'S HERNDON: He bridled it, saddled it, made it behave.

A homolog of ammonia with two nitrogen atoms and four hydrogen atoms, the hydrazine molecule is a simple one. It's so simple in fact that the unwary could easily be trapped into thinking that its synthesis is no problem. It looks a cinch, for example, for a synthesis straight from ammonia by dehydrogenation.

For that matter, it looks as though it could be easily built up directly from nitrogen and hydrogen. Unfortunately, however, although both methods along with a fistful of others are being investigated (*CIW, Mar. 17, '51*), no notable success has been reported.

* It was isolated by Curtius in 1887. But 12 years earlier, Emil Fisher postulated the chemical as the parent compound of the reduction products of diazos. It was Fisher, in fact, who gave it the name hydrazine.

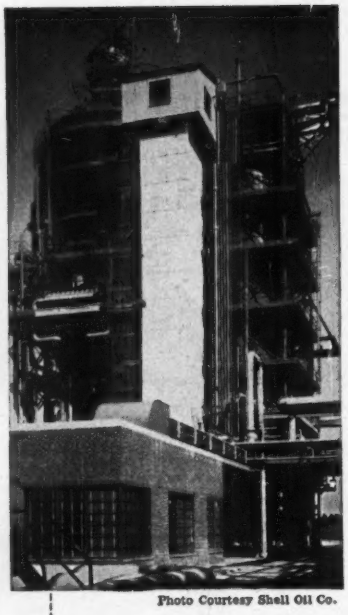

Photo Courtesy Shell Oil Co.

Here's Where the Markets Lie

Hydrazine zoomed to fame on the face of its potential as an ingredient for rocket fuels and, more recently, as a raw material for the anti-TB drug, isonicotinic acid hydrazide.

The first outlet is still significant, but the drugs call for only minor quantities of hydrazine. A weak base and a strong reducing agent with a narrow vaporizing range, hydrazine seems well-suited for a raft of industrial applications provided the price is right. This is how Mathieson figures the potential outlets:

- **Maleic hydrazide. Developed by Naugatuck Chemical, this compound is presently the biggest single industrial outlet for hydrazine. Although all the tests on it are not yet in, maleic hydrazide holds great promise as a growth retardent for certain plants.**
- **Soldering fluxes. Hydrazine's strong reducing properties make it unique as a soldering flux. Mathieson, which has conducted cooperative investigations with McCord (Detroit) thinks fluxes for soldering brass and copper a very promising market for hydrazine salts and one that is currently commercial. Both McCord and Mathieson have received patents on hydrazine-based fluxes (*CW, July 11*). Soldering fluxes for aluminum are also a good bet.**
- **Blowing agent for foam rubber. Since it releases nontoxic, odorless nitrogen and because the resulting products are light-hued, hydrazine is an important raw material for blowing agents.**
- **Pharmaceuticals. Aside from its use in the TB drugs, hydrazine-based products have shown ability to reduce blood pressure. Not to be overlooked are Eaton Laboratories' Furacin and Furadantin nitrofuranes. The former is used to combat coccidiosis among poultry, the latter is effective against urinary tract infections.**
- **Other potentially big outlets also depend on its reducing properties. It can be used, for instance, to separate rare metals from their oxides and sulfates, also as a means of depositing thin films of metals on glass, plastic and other poor conductors. It seems valuable, moreover, as a "getter" of oxygen in treating boiler feedwater.**

Actually, the best method currently available of commercial exploitation is the one developed by Raschig in 1907 and used—with modifications—by the Germans and by U.S. producers.

In it, chlorine and caustic react to form sodium hypochlorite. The hypochlorite reacts with ammonia to form chloramine, which in turn, when treated with more ammonia, is converted to hydrazine. Fairmount modifies the process by using urea in place of ammonia.

One of the difficulties in the process is that the chloramine and hydrazine readily react to form ammonium chloride and nitrogen. This reaction, moreover, proceeds rapidly and is easily catalyzed. Raschig found he got better yields of hydrazine by using gelatine or glue as "catalysts."

Actually, later investigators discovered that the "catalysts" tied up metal ions that catalyzed the side reaction between chloramine and hydrazine, hence were actually inhibitors.

The Raschig process is tricky and cumbersome. But even so, the difficulties compound after the hydrazine is formed. The basic problem is that the resulting liquor contains only about 2% hydrazine. It cannot be evaporated to the anhydrous form, moreover, because an azeotrope forms (the so-called hydrate) at a molal concentration of about 58.5%. Fairmount fractionates it in steps to about 30-65% hydrate, then dehydrates with caustic.

Mathieson has two methods of approach. The first is to convert hydrazine to the sulfate, then ammonylize to form ammonium sulfate (which is separated off) and a solution of hydrazine in ammonia, which can be readily evaporated to anhydrous hydrazine. Unlike Fairmount's method, Mathieson's sulfate process is applicable to the dilute liquors from the Raschig process.

Mathieson prefers its alternative method and will employ it at Lake Charles. The firm merely describes it as an azeotropic distillation. An azeotropic distillation to produce the hydrate from the weak Raschig liquors has been well known. But an azeotropic distillation to turn out anhydrous hydrazine is a new twist.

In any case, the product from the process is packaged in stainless steel containers and covered with a nitrogen blanket.

German Origin: The problems of making hydrazine can be attested to by the Germans who built two commercial plants during the war. The first was located near the I. G. Farben plant at Leverkusen. Completed in Apr. '44, it made 20 tons that month, increased output to 40-45 tons/month and made 280 tons, all told, in that year. It never, however, reached its rated stride of 60 tons/month. The

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Octyl acrylate	Hexyl methacrylate	Lauryl methacrylate

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second plant—at Gersthofen—was completed in October of the same year. Although rated at 300 tons/month, it produced only about 50 tons of hydrazine.

Nevertheless, it's the Germans who deserve the credit for moving hydrazine up the ladder toward commercial prominence. In this country, Mathieson has had an application study on hydrazine under way since 1939. But it wasn't until after the war when an industrial team from the U.S. reported on German hydrazine production methods that it started considering production alternatives.

In general, experts have taken a dim view toward the Raschig process as the ultimate commercial source of hydrazine. But until something better is developed, Mathieson figures it has successfully tamed the chemical. And getting a special glow from the realization are the men responsible for the process, L. Kermit Herndon (vice-president of Mathieson Chemical Research and Engineering Division, and director of Chemical Division Research) and his associates James Troyan, John Haller and Bernard Nicholiason. For if hydrazine is actually tamed, they're the ones who bridled it, saddled it, made it behave.

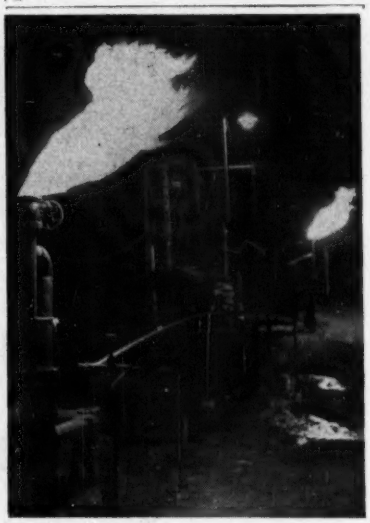
Out but Not Down

Although the fires resulting from the underground gasification of coal at Gorgas (Ala.) were extinguished last month, the project cannot be written off yet. Congress has declined to ante up any more money for the joint project of the Bureau of Mines and Alabama Power, but the power company intimates that it may continue its experiments there.

Just when operations will resume has not been determined. But neither Chairman Thomas W. Martin nor Milton H. Fies, vice-president in charge of coal operations, has given up hopes that underground gasification of coal will be put on a commercial footing.

Underground gasification of coal still ranks high on the research dockets of Sinclair Coal and the Missouri School of Mines. Both England and Belgium are also striving to develop gasification processes that will be able to utilize coal in thin seams.

And before Congress lowered the lid on its appropriations coffer, the Gorgas experiments, which had been going on since 1947, had attracted world-wide attention. The first series proved that it was possible to maintain underground gasification. The next set of experiments investigated



FIRES AT GORGAS: Before Congress put them out.

the possibilities of carbonizing the coal by the electro-linking method.

In this process, holes are drilled into the coal beds and electrodes are placed in the holes. Current passing between the electrodes carbonizes the coal and the seam is fired.

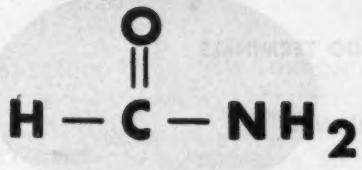
At Gorgas, it was discovered that the carbonization gas formed in the electro-linking method has a heat content ranging from 500 to 900 Btu./cu. ft. But possibly more significant for the chemical industry was the discovery that electro-carbonization produces a porous, red-hot coke bed that is ideal for making synthesis gas. Air or other gas is introduced at one borehole and is then removed from the other.

When air was employed, gas with a Btu.-content of 80 to 120/sq. ft. was produced for a period of up to three months. It contained about 60% nitrogen, however.

Last November, oxygen was substituted for air, and a synthesis gas virtually free of nitrogen was formed. The ratio between carbon monoxide and hydrogen was found to be 1 to 1, a good proportion for either synthetic fuels or organic chemicals. From a single small unit, 218 Btu. gas was turned out at rates up to 1,400 cu. ft./minute. Officials of Alabama Power think, moreover, that the heat content could be upped by controlling the moisture underground.

The experiments did much, says Alabama Power, toward paving the way for further experiments on a commercial scale. But with Congress's present attitude toward spending, it seems certain that if underground gasification is to be a commercial reality, industry must do it alone.

AN IDEA-CHEMICAL FROM DU PONT



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SOLUBILITY DATA

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Very slightly soluble in diethyl ether and benzene.

Dissolves a number of inorganic salts, including the chlorides of copper, lead, zinc, tin, cobalt, iron, aluminum and nickel; the acetates of the alkali metals; and certain sulfates and nitrates.

Dissolves casein, gelatin, animal glue, glucose, zein, tannin, starch, lignin, polyvinyl alcohol and cellulose acetate.

Has softening action on cellulose and cellulose nitrate.

IMPORTANT CHEMICAL PROPERTIES

Reacts with alcohols on heating to give formic esters and ammonia.

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Why not investigate the use of Du Pont Formamide in your business? We'll be glad to send you more information on this versatile chemical—specifications, properties, suggested uses, etc. Just clip the coupon below or write on your letterhead to E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Department, Wilmington 98, Del.

GRADE AND AVAILABILITY: Du Pont Formamide, available with 97.0% min. Formamide content, is shipped in tank cars and 55 gallon non-returnable steel drums (net. wt. 500 lbs.).

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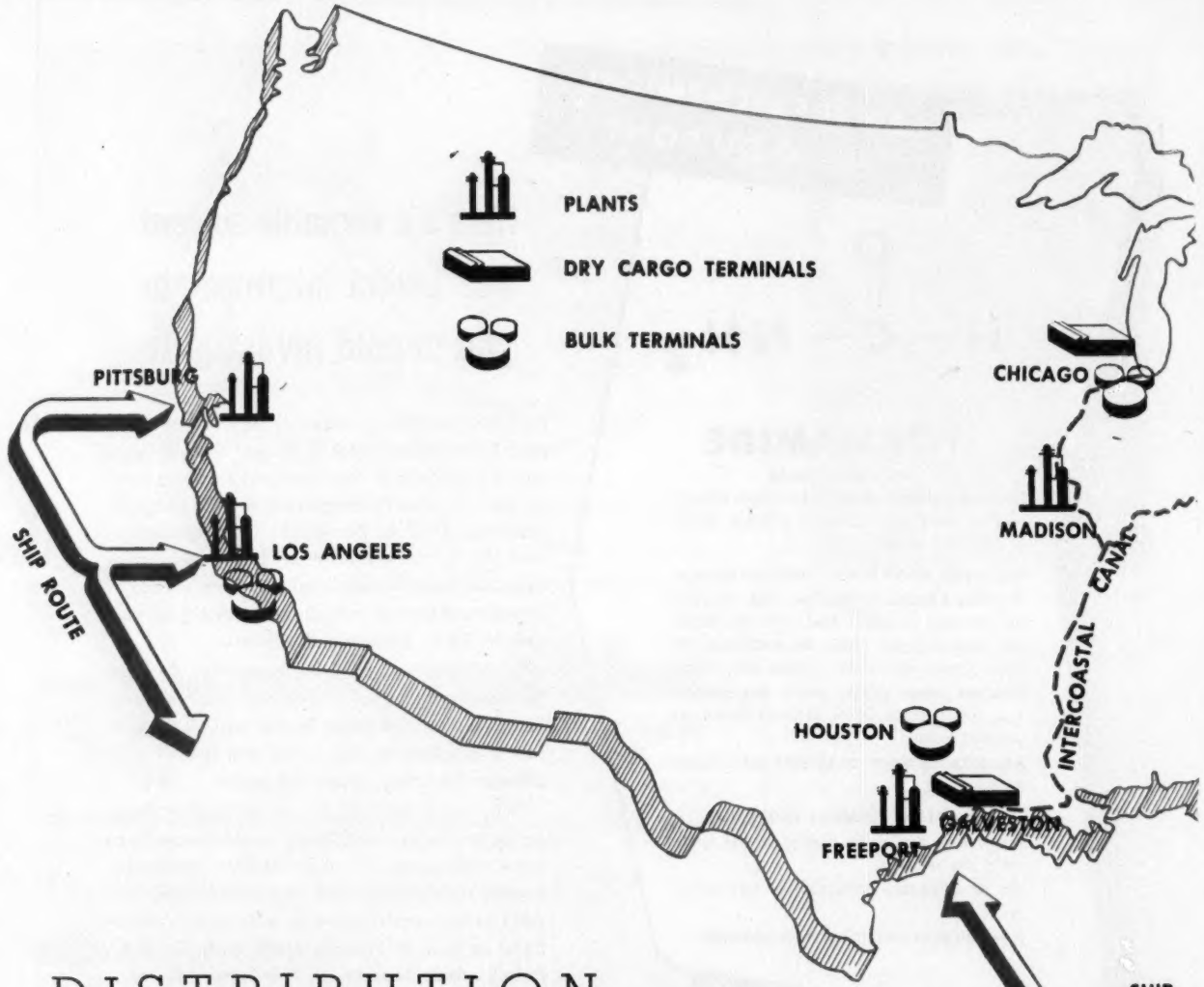
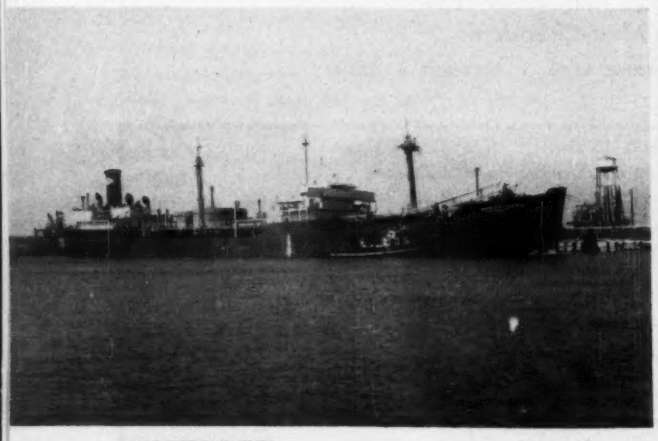


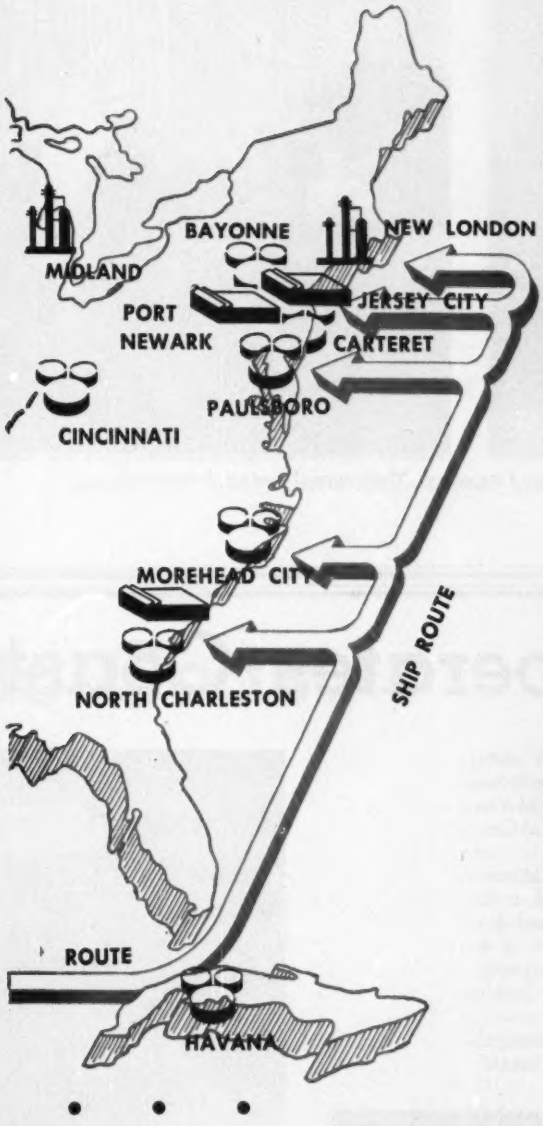
DISTRIBUTION . . .

Water Dilutes Freight Costs .

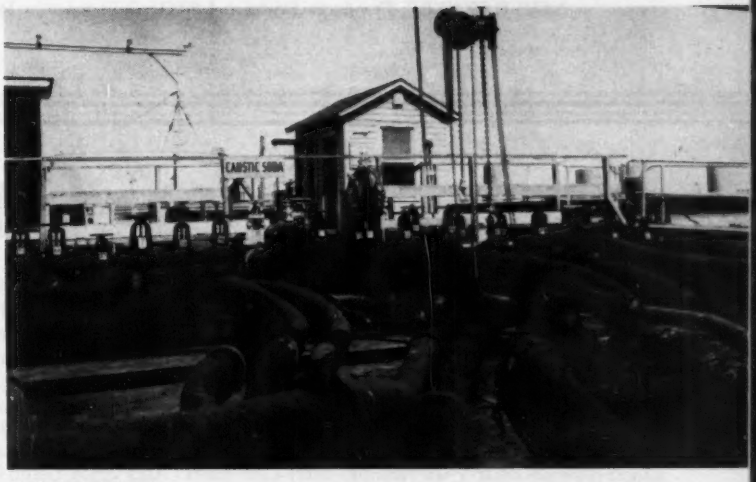


FREEPORT

CINCINNATI

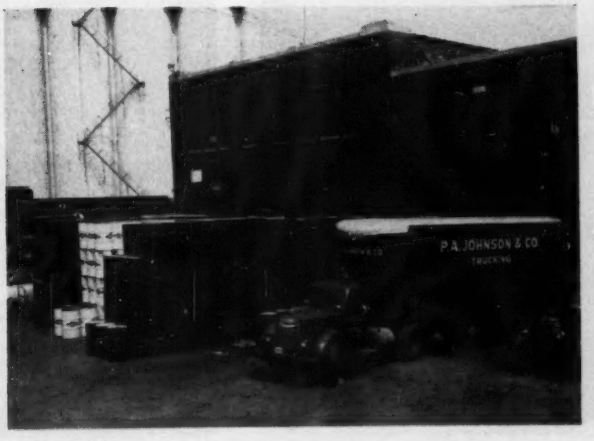


MOREHEAD CITY



CARTERET

(See pages 52-53)



CHICAGO

NORTH CHARLESTON

NERVE CENTER: Freeport's Beutel and ETO's Sulik meet in Jersey City offices. Their normal contact, however, is . . .

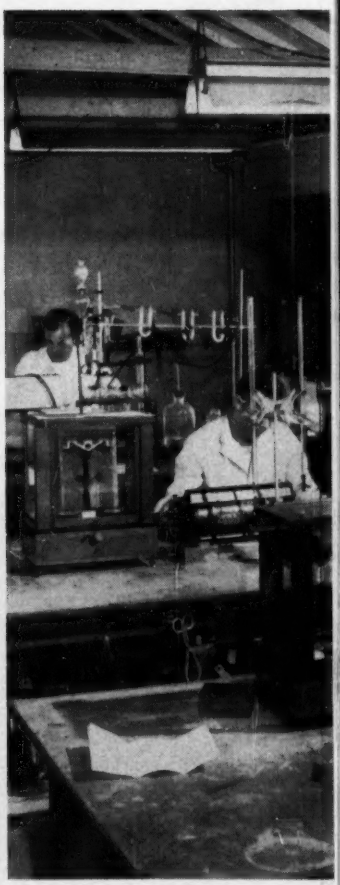
. . . Operates Coast

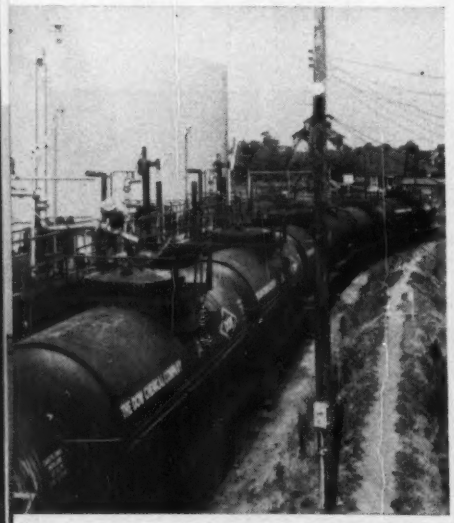
A HEAVILY LADEN chemical tanker early this week pulled in its mooring lines and steamed out of the harbor at Freeport, Tex. Within 17 days it will be back in port, but in the meantime it will have delivered caustic soda to Carteret, carbon tetrachloride to Paulsboro, glycols and magnesium alloys to Port Newark—all in New Jersey—and styrene monomer to New London—in Connecticut.

Also this week—and half-way across the continent—another chemical water movement is taking place. Before the weekend, two barges filled with muriatic acid will have rounded the bend that marks the bottom reaches of the Ohio River. Their destination: a Cincinnati chemical terminal.

Behind them on the muddy Mississippi is a third barge—loaded with still another product—also bound for Cincinnati. And close behind it is a fourth vessel—headed for Chicago with a cargo of assorted drummed chemicals.

There is even a transcontinental flavor to all this activity. The drums of



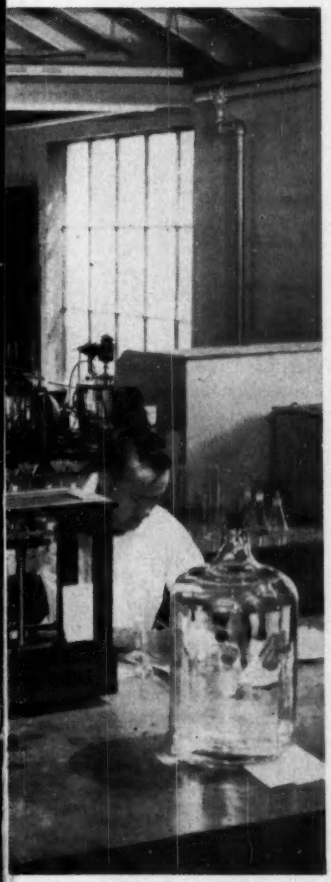


RESPONSIBILITIES: The Eastern Terminal Office schedules tank cars and tank trucks, arranges storage, keeps tabs . . .

. through Dow's teletype and telephone network, which link together Texas plants, New Jersey terminals, ocean tankers.

to Coast

(See pages 50-51)



glycol to be left at Port Newark will be stored beside iodine kegs brought by freighter through the Panama Canal from a plant in California. The common denominator: all of these movements are phases of Dow Chemical's concerted effort to capitalize on the economies of chemical water transport.

By using the water routes, Dow is proving that the populous East and Midwest can be "logical" markets for Southwestern chemical production.

River Boom: Sparkplug of this program is the company's Texas Div. traffic manager, Oliver Beutel (often called "Admiral" because of his enthusiasm for the development of water-based shipments). Under his direction, Dow has pioneered the techniques of using barges and chemical tankers, was the first company to bulk-ship by water such chemicals as hydrochloric acid, carbon tetrachloride, chloroform, and ethylene dichloride.

The aim of any such movement is to bring the commodity—preferably in

. . . on purity, maintains inventory records, processes sales orders, mails out invoices and bills of lading.

bulk—to a terminal that is as close to the consuming market as possible. From there the shipments can be broken down for fast, short-haul deliveries in tank cars, tank trucks, and drums.

Dow first used this distribution method on the West Coast. Caustic soda from its plant at Pittsburg, Calif., was moved by ship to Los Angeles harbor for eventual shipment by land to customers in the southern California area.

In 1945, the company instituted ethylene dichloride and carbon tetrachloride barge movements from Texas to the Tresler Oil Co. terminal at Cincinnati. Shortly afterward muriatic acid started following the same route. The volume has grown to the point where today the acid alone requires constant shuttling by nine special barges (carrying 1,000 and 1,200 tons of acid apiece). To keep the Cincinnati tanks from overflowing, 64 muriatic tank cars fan out over a sales territory that stretches from Minneapolis to Boston.

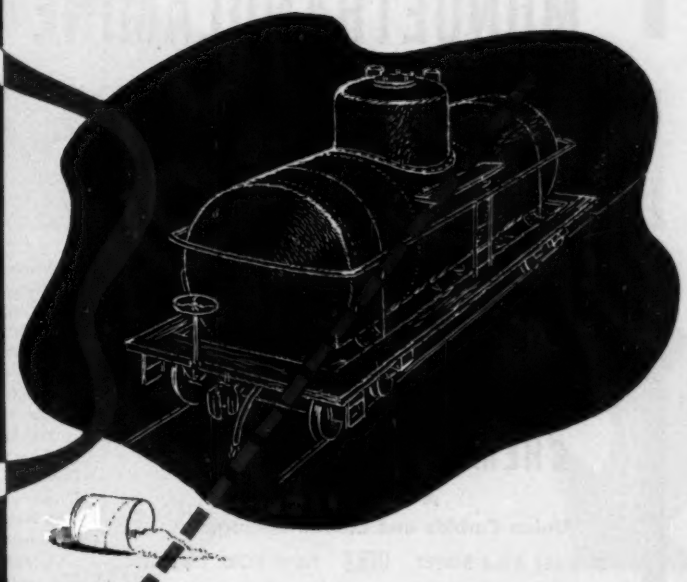
While this river boom was developing,* Dow was experimenting with a shipping technique that had an even greater potential: bulk ocean transport. The company had leased the *Marine Chemist*, a converted tanker. It was to link Dow's prodigiously productive Texas plants with the unsaturated Eastern markets. But with the ship-size potential came some ocean-size problems. It would take careful coordination between Texas and the East Coast terminals if the full value of the *Chemist* were to be realized.

Nerve Center: Answer to this problem was the establishment of an Eastern Terminals Office at Jersey City, N.J. This unit is under the direction of George Miller, Beutel's assistant. Lenart Sulik manages the office, supervises the distribution of all Texas Div. products in the area north of a line drawn through Norfolk, Pittsburgh and Cleveland. It is in constant teletype contact with the Freeport headquarters and Dow sales offices in Midland, Boston, New York and Philadelphia.

Sulik's office has complete responsibility for the four commercial terminals used by Dow in the New York-Philadelphia district. A fifth will be added when the new Lehigh unit (*CW, Apr. 25*) at Bayonne, N.J., is completed. The office keeps inventory records, schedules shipments, routes traffic, processes sales orders, and issues invoices and bills of lading. Act-

* Many another chemical company, of course, has subsequently contributed to this boom. Says one barge operator: "If we didn't think there was a brilliant future for the shipment of chemicals on the inland rivers, we wouldn't be in it. . . . Some months, up to 90% of our liquid fleet is in chemical service."

Switch to Sorbitol



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No other polyol offers sorbitol's combination of superior humectant properties, premium purity and uniformity, neutral color and odor, sweet cool taste . . . all of which are adding new appeal to scores of well-known products.

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DISTRIBUTION . . . .

ing as a nerve center, it coordinates sales offices, terminals, and the plants in Texas.

South, Too: The industrial Northeast is not the only market, however, that can be reached by coastal transport. To tap the industrial South, Dow has established a working arrangement with the North Charleston terminal of the South Carolina State Ports Authority. The *Marine Chemist* delivers 50% caustic into a special tank reserved for Dow—and the Port Authority is constructing an additional tank for the 73% grade that the company's now-abuilding new tanker (as yet unnamed) will be able to carry. The authority warehouses are also used to store up to 2,000 drums of other Dow chemicals sold in this area.

Still in the formative stage is a similar arrangement with the North Carolina Authority. At Morehead City, the authority has built an 11,000-bbl. tank for "spent" ethylene glycol from Du Pont's Dacron fiber plant at Kinston. The *Chemist* will carry this material back to Texas for purification. And in the process, other products will be unloaded—making the port another distribution center for Dow's continuing program of expanding its markets by cashing in on the economies of water transport.

•

New Sites: Celanese Corp. of America has established a new chemical sales office in St. Louis, Mo.

• Minnesota Chemical Co. (St. Paul) has purchased a building to use as a warehouse for the distribution of its products. The firm is primarily a laundry and dry cleaning supply house and also manufactures soap.

• Facilities for manufacturing, packaging, storing and shipping liquid products of companies that wish to market in the industrial East have recently been installed by Mercer Oil & Chemical Co., Inc., Philadelphia.

•

Buffalo Electro-Chemical Co., Inc., has published a new booklet on sodium perborate. Physical properties, stability and uses are some of the topics discussed.

•

Pyramid Chemical Co. (Philadelphia) is now buying surplus chemicals and dyestuffs. Pyramid sells these materials abroad, claims that it can compete with West German and British exporters.

•

Decorating Process, Inc., has opened offices in Baltimore, Md., to service its color decorating processes for bottles, cans and drums.

Save money by switching from 50% to 73% CAUSTIC SODA!

More and more users, who have been buying 50% caustic soda, are following the trend to 73% concentration. This practice is being advanced and advocated by Columbia-Southern because of the possible savings in delivered cost by converting to the higher concentration.

Naturally, your location and the volume of caustic soda consumed determine the savings realized in switching from 50% to 73% concentration. But, regardless of the amount of caustic soda you use, we suggest you investigate the possible savings in your own operation.

Following are examples of annual savings, taken from customers' records selected at random, who converted to 73% caustic soda.

CUSTOMER "A" saved $2,850 the first year

CUSTOMER "B" saved $2,650 the first year

CUSTOMER "C" saved $3,500 the first year

CUSTOMER "D" saved $2,055 the first year

We believe it will pay you to look into the savings of buying 73% rather than 50%. The services of our technical staff are at your disposal. We shall be glad to confer with you, make recommendations, and supply data. Write our Pittsburgh office today.

COLUMBIA-SOUTHERN CHEMICAL CORPORATION

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Minneapolis • New Orleans • New York • Philadelphia • Pittsburgh • St. Louis • San Francisco

Coincidence on Purpose

Now being readied for commercial exploitation are a bevy of chemical intermediates of allethrin manufacture.

They're relatively untried, are being released in the belief that availability will spark a search for uses.

Each of the allethrin trio—Benzol, Carbide and U.S.I. —has the same idea, will release its own line of intermediates.

It could be a coincidence when three firms of assorted size and complexion are simultaneously readying an identical string of complex new organic chemicals. Such an improbability is now a reality; and, indeed, it's no coincidence at all. For the companies in question—Benzol Products, Carbide and Carbon Chemicals, and U.S. Industrial Chemicals—are joined by an overriding common interest: allethrin.

The roster of their upcoming organics is composed of intermediates used in the manufacture of the synthetic insecticide.

A more fertile ground for embryonic commercial organic compounds would be hard to stake out. A triply convergent operation starting from three simple materials, the allethrin process goes through more than a dozen distinct steps, yields as many intermediates. Not all of these substances justify commercial exploitation; some are too complex (and costly). But the remainder should provide a field day for organic chemists. Included are such juicy specimens for exploration as ethyl-3-keto-6-heptenoate; 2,5-dimethyl-1,5-hexadiene; and chrysanthemum monocarboxylic ester.

As one would anticipate, exploration will be the keynote of any effort to develop markets for the spate of allethrin precursors. One or two may find a waiting niche, prove a welcome step-cutter in some tedious commercial synthesis. But it's a pretty safe bet that a lot of imaginative research will be required to find paying jobs for the rest. And they will have to be fairly respectable jobs, at that. None of the involved structures could possibly carry bargain-basement price tags.

No Frills: Benzol, Carbide and U.S.I. harbor no illusions on that score. They point to a few possibilities in the synthesis of pharmaceuticals and perfume materials, foresee a potential role in resin production for the relatively inexpensive hexadienes. But, in the final analysis, they fully realize that the probability of finding remunerative outlets is tied directly to the number of researchers they can interest in their varied offering. Purely and simply, it's the shotgun approach —with no frills.

Why the wholesale rash of allethrin intermediates? Reasons hinge on the over-all allethrin supply-demand picture; briefly, they add up to one goal: a better competitive position for the insecticide. Allethrin capacity, counting Carbide's 400-500,000 lbs./year plant due in next year, is more than adequate for short-term demand. For the long run, however, new uses for the insecticide (e.g., in packaging materials, as a grain protectant, etc.) are being heavily counted on to take up the slack. If intermediates can be made to pay their way, cost of the final product could be cut, its potential for new uses boosted.

It's fairly clear that one or two sparse extra-curricular intermediate applications aren't going to make much difference in the cost of allethrin. Needed are several healthy new outlets. Capacity for turning out substantial lots of noncaptive intermediates shouldn't be any problem.

Samples of several of the allethrin spawned chemicals have been distributed by each of the hopeful trio. But so far, only Benzol has given public notice of availability. Benzol's initial offerings: allyl acetone; chrysanthemum monocarboxylic ester; 2,5-dimethylhexadiene-1,5; 2,5-dimethylhexadiene-2,4; ethyl-α-allylacetoacetate. The box includes the complete schedule of potentially available allethrin intermediates. Sample quantities of most compounds listed may be had from all three firms.

Over the long run, allethrin producers will be seeking uses for these process intermediates:

allyl acetone	2,5-dimethylhexadiene-1,5
ethyl-3-keto-6-heptenoate	2,5-dimethylhexadiene-2,4
3-hydroxy-8-nonen-2,5-dione	diethyl carbonate
allethrolone*	chrysanthemum monocarboxylic ester
pyruvic aldehyde	diazoacetic ester†

Other process chemicals like allyl chloride, methallyl chloride, acetoacetic ester and glycine are established commercial products.

* 2-allyl-3-methyl-2-cyclopenten-4-ol
† Relatively unstable, but could be produced on a custom basis.

New Horizons

Significant new developments in research expansion and diversification are coming thick and fast. Here's a rundown of who's doing what, why and where:

- Interchemical corp. (New York) is consolidating its varied pigment and coatings activities in a newly established commercial research department. Function of the new branch, according to Interchemical, is threefold: to feel out commercial potential of new products and ideas; to dispose of products and developments that the company doesn't choose to exploit; and to perform the firm's technical research.
- American Machine & Foundry Co. will launch a chemical research and development laboratory at Springdale, Conn. Formerly technical headquarters of American Optical Co., the Springdale building will supplant AMF's current Brooklyn, N. Y., laboratories. Personnel and equipment should be settled in their new surroundings by October. AMF's chemical research is concerned with foods, tobacco, plastics, electrical insulation and the design of equipment for processing these products.
- Pittsburgh Plate Glass Co. also has its eye on new laboratories—at Springdale, Pa., which the company

taming currents and chlorine

...with ACE® HARD RUBBER

Looks like a greenhouse, but the 2 acres of "flowerpots" you see here are actually DeNora cells, producing chlorine, caustic and hydrogen at the gigantic new Muscle Shoals plant operated by Monsanto Chemical Company for the Army Chemical Corps.

The covers for these cells posed a tough design problem. They support the heavy graphite electrodes, and must not sag or "creep." They seal in the gases, and must be corrosion resistant. Excellent electrical insulation is needed to prevent expensive current leakages. The covers should be strong and tough, yet light in weight for easy handling. Finally, materials costs must be relatively low, with efficient mass-production techniques.

After considerable study, based on experience with many materials, these covers were designed of solid molded ACE Hard Rubber.

This example is only one of hundreds of ways ACE rubber and plastic products serve and save in the chemical industry. ACE tanks, pumps, piping, valves, fittings, and molded parts are available in standard or special constructions for complete chemical processing, storage or circulating systems. Ask our engineers to recommend the most economical corrosion-resistant equipment for your processes.

ACE rubber and plastic products

AMERICAN HARD RUBBER COMPANY
93 WORTH STREET • NEW YORK 13, N. Y.

has chosen for the site of its new paint division research center. Ground has been broken for the buildings, which will provide approximately 68,000 sq. ft. of lab area, house about 60 paint staffers. Existing branches of the division's technical department (at Milwaukee and elsewhere) will continue to function.

• Owens-Illinois Glass Co. has started construction of a new technical center at Toledo, O. Scheduled for completion by late 1954, the two-story structure will accommodate a staff of 350, consolidate the firm's general research program with the engineering activities of its divisions.

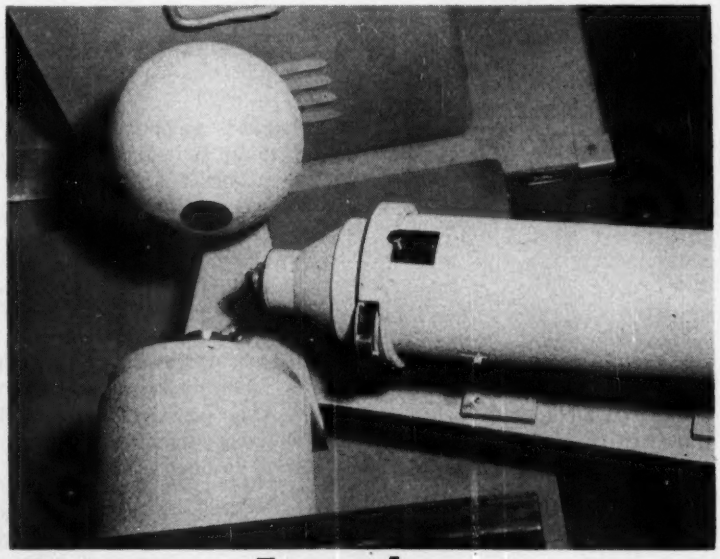
• Southern Research Institute has formalized departure from its traditional fields of endeavor by recently breaking ground for a five-story cancer research building. Normally concerned with industrial studies, Southern got into cancer research in 1945, gradually expanded in that field. The structure now in the works will centralize its cancer work, release much-needed space for more conventional projects. Two-thirds of the estimated $300,000 construction cost will be footed by Sloan-Kettering Institute (New York) with which the new research unit will be affiliated.

•

Insect Assist: An old trick received new attention in insect-control experiments by U.S. Dept. of Agriculture entomologists. The USDA researchers probed the use of insect-insecticide combinations in pest control, found wasps to be helpful adjuncts to chemical agents in dealing with oriental fruit moths. Results, gained in New Jersey peach orchards, are reported to be as good as those obtained with conventional insecticidal sprays.

The use of wasps isn't a very new idea in moth-killing. Before the general availability of modern organic insecticides, peach growers prevented oriental fruit moth damage solely with parasitic wasps. DDT, EPN and parathion later proved more than adequate for the job. But teaming the animate and chemical killers was stymied for want of a way to prevent the insecticide from destroying the beneficial insect along with the pest.

USDA probers haven't found the way. Their success is the result of

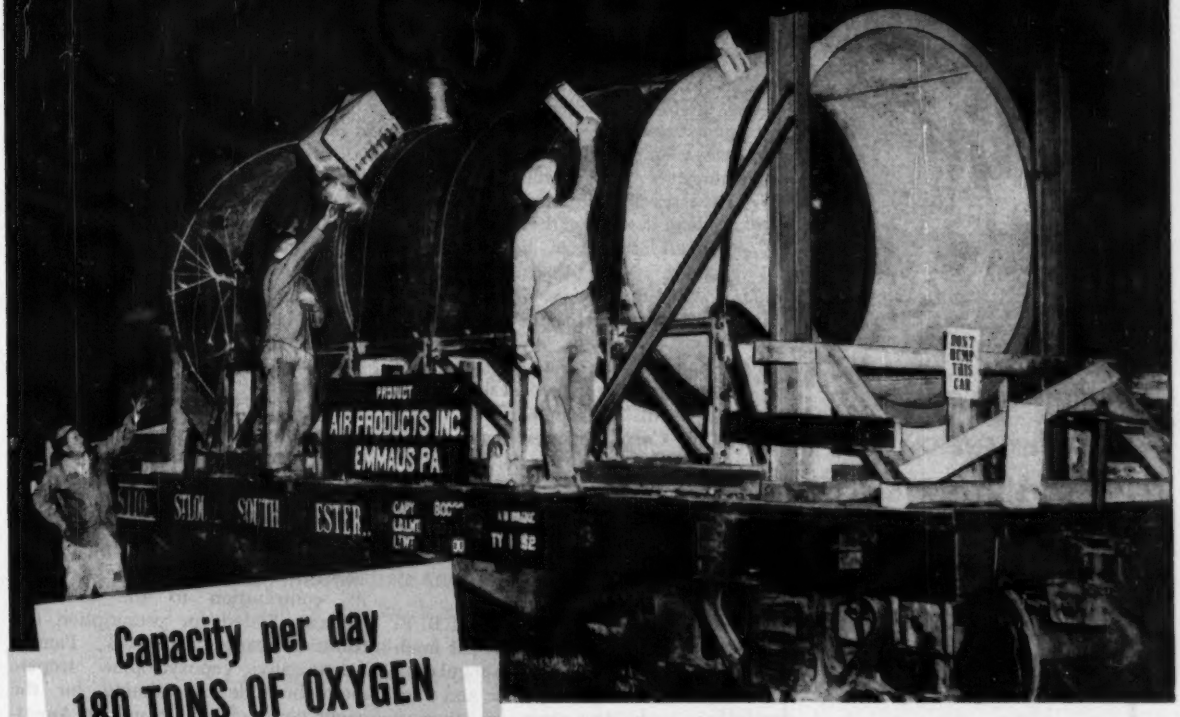


Answer to Aerosols

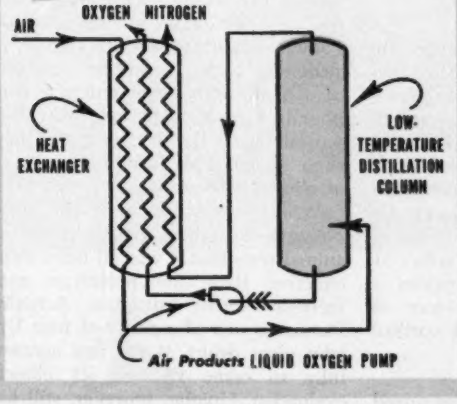
DESPITE THE RESEMBLANCE, the geometric forms arrayed here, aren't a surrealist's handiwork: their function is of a far more practical nature. Taken together, they comprise the business end of Stanford Research Institute's (Palo Alto, Calif.) new aerosol camera. Designed to fill the need for an instrument to photograph tiny particles suspended in air (free aerosol), the apparatus fires a very narrow beam of high-intensity light into a field of focus through which an aerosol is allowed to circulate. Photograph is taken by the camera (*below*) pointed at the black field (*above*) in the spheroid; the light source is contained in cylinder (*right*). Capable of operating in the field, the new aerosol camera should play an important role in SRI's air research program, for previously unobtainable data.

Giant Oxygen Distillation Column

...part of an *Air Products* Generator for SPENCER CHEMICAL'S new ammonia plant



Capacity per day
180 TONS OF OXYGEN
350 TONS OF NITROGEN



SIMPLIFIED DIAGRAM of the *Air Products* Generator for Spencer, which will separate oxygen and nitrogen from liquid air. *Air Products* columns of this type also used for low-temperature scrubbing of synthesis gas, hydrocarbon separation, etc.

ON ITS WAY to Spencer Chemical Co.'s new ammonia plant in Vicksburg, Miss. Spencer awarded *Air Products* the contract to design and manufacture a complete Oxygen-Nitrogen Generator.

When in operation, this generator will produce 180 tons of oxygen and approximately 350 tons of high-purity nitrogen per day. Spencer will use the oxygen to produce hydrogen (H), then combine this with the nitrogen (N) to produce ammonia (NH_3).

What are your requirements?

Air Products offers low temperature apparatus custom-made for all gas separation processes, plus a standard line of Oxygen-Nitrogen Generators. Write us your requirements.

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Air Products INCORPORATED

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Allentown, Pa.

judicious timing; first the wasps were released, then the insecticide was sprayed. The combined approach may be attractive to some peach growers, but, opines department entomologists, "the greatest value from these tests is the knowledge that these apparently opposite approaches to insect control can at times be used together. Possibility: "Ultimately, this knowledge may lead to the practical control of many pests through the use of combinations of both beneficial insects and insecticides."

•

All for Science: Kids around Oak Ridge, Tenn., are earning their pocket money these days from the Atomic Energy Commission. The Tennessee youngsters trap fireflies for which AEC pays 25¢ a hundred. Oak Ridge scientists are using the bugs for fundamental studies of light-producing reactions. More than 11,000 have been traded in for cash; about 89,000 more are needed.

•

Carload Debut: Carload lots of a new high-pressure acetylene derivative are newly available from General Aniline & Film Corp. The newcomer is the ammonium salt of the half amide of methyl vinyl ether-maleic anhydride copolymer. A white, water-soluble powder, the polymer is of potential value in sealing formulations and coatings.

•

New Regulators: Researchers of B. F. Goodrich Chemical Co. have hit upon a new class of plant growth-regulating compounds: haloaryl sulfinic and thiosulfinic acids. The acids, in low concentration, act as growth stimulants; in high doses, they give the opposite result. Effective with a variety of plants, the chemicals are covered by U.S. Patent 2,632,698.

•

Steroid Advance: A new reagent for the detection and estimation of hydroxy steroids on paper chromatograms is the dividend of research by H. Rosenkrantz of Worcester Foundation for Experimental Biology (Shrewsbury, Mass.). A concentrated solution of antimony trichloride in nitrobenzene, Rosenkrantz' discovery gives characteristic colors with 51 steroids. Significance: it provides a new and relatively simple way of separating complex sex and cortical steroids.

•

Birth of a Process: Complex (or mixed acid) salts of dihydrostreptomycin have sparked the development of a new Chas. Pfizer & Co. (Brooklyn, N.Y.) process for the isolation of the antibiotic. Pfizer chemists prepared about 35 crystalline mixed acid salts of dihydrostreptomycin, took a second look at the iodide sulfate. Reason: its relatively low solubility in water, high specificity of formation. From solubility data, a new and attractive process for isolating the antibiotic (as the iodide sulfate) has been blueprinted. Bacterial spectrum, resistance pattern, acute and chronic toxicity of dihydrostreptomycin iodide sulfate are comparable with those of dihydrostrepthomycin sulfate.

•

Transistor Boon: Germanium ingots, produced according to a new technique devised by General Electric's Robert Hall, could have top cost-cutting significance in transistor manufacture. By Hall's method, as many as 100 wafer-thin layers of specially treated germanium may be squeezed out of a 6-in. ingot. Older procedures yield only one or two layers from an equal amount of the semiconducting material.

Still in the laboratory, Hall's ingot is composed of layers of germanium, alternately tinged with traces of gallium and antimony. In a transistor, the gallium-doped component acts as a grid; its antimony-doped counterpart does the work of the cathode and plate of vacuum tubes.

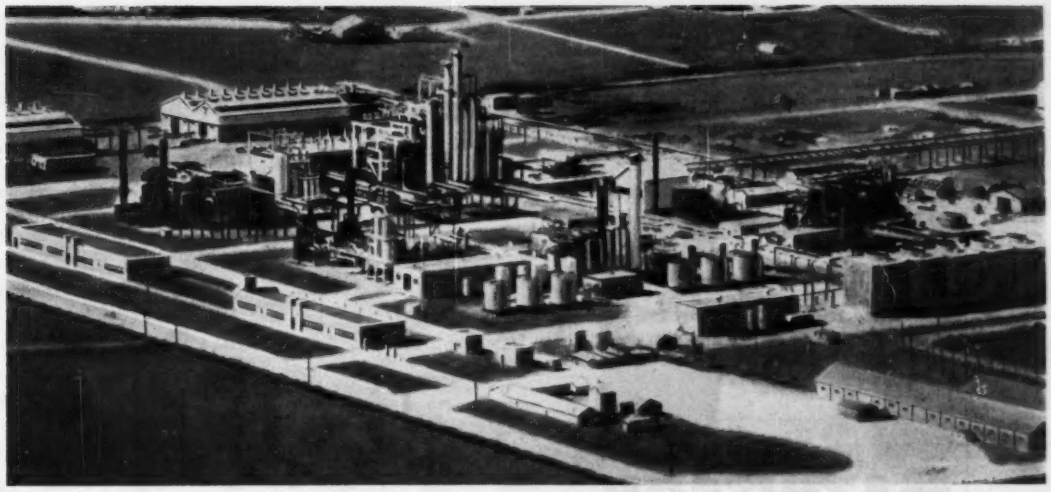
•

Through the Vagus: Upjohn Co. (Kalamazoo, Mich.) recently readied its contribution to the anti-ulcer barrage. Slated for prescription distribution early last week, Pamine (chemically: epoxytropine tropate methylbromide) is aiming for the vagus nerve of some 8 million Americans who haven't learned to stop worrying.

The drug, administered orally, works by inhibiting impulses—paralyzing the vagus nerve—responsible for acid secretion in the stomach. Pamine was uncovered by Upjohn researchers through routine screening of quaternary ammonium compounds for ulcer therapy, was then passed on to the University of Chicago School of Medicine for two years of clinical evaluation.

While somewhat toxic in overdosages, the drug demonstrated in animal tests that it was 20 times more effective than the prototype antisecretory agent, atropine. Actually, Pamine is one of a series of four Upjohn ulcer drugs, is the first successfully to come through its clinical evaluation. Upjohn, however, still has high hopes for the other three in the series.

Marketed in 2½-millligram tablets, Pamine will sell between $3.50 and $4.00 for bottles of 100.

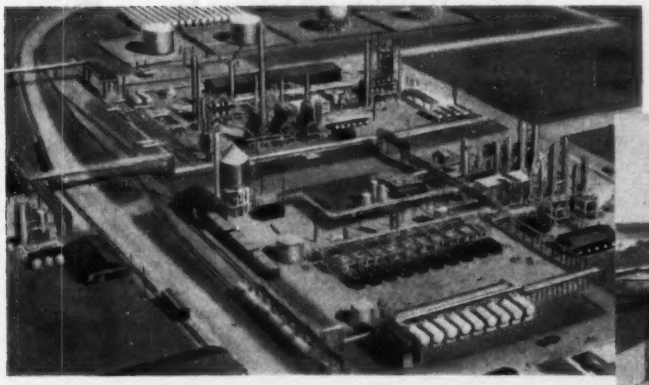


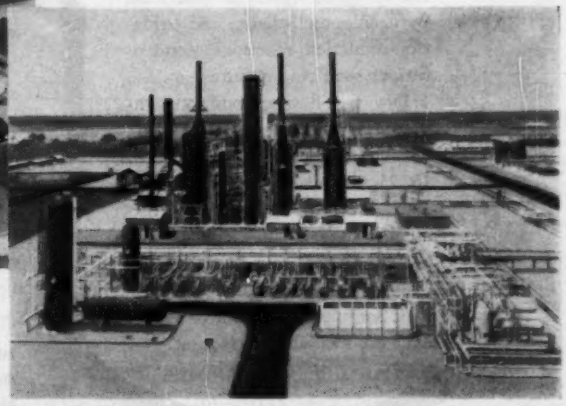
Development Studies *and* Reports

FOR THE NATURAL GAS, PETROLEUM, PETROCHEMICAL AND CHEMICAL INDUSTRIES

Stone & Webster Engineering Corporation, Badger Process Division, has designed and constructed many plants for the process industries to produce intermediate and finished products. Much of this work resulted from development studies and reports made by the Corporation, which included consideration of markets, plant location, raw material supply, processing methods, handling facilities, utilities, transportation and other factors.

The broad experience of the Corporation in the preparation of development and economic studies and reports in these specialized fields is available for new projects.



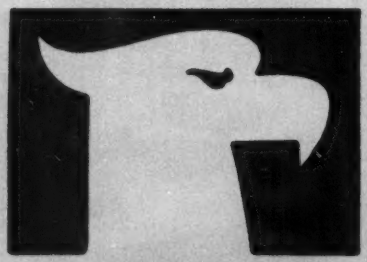


STONE & WEBSTER ENGINEERING CORPORATION

BADGER PROCESS DIVISION

AFFILIATED WITH E. B. BADGER & SONS LIMITED

for bigger yields, better production control



MATHIESON

dry sodium methylate

Consumers of sodium methylate know from experience the hazards of preparing methylate solutions in their own plants. They know also the difficulty of obtaining uniform results with such "home-made" solutions.

That is why so many users welcomed the pioneering of Mathieson nearly fifteen years ago when *dry* sodium methylate was first made available. Since then, as the pioneer —and only—producer of *dry* sodium methylate, Mathieson has continuously grown in experience and know-how in the safe production, handling, packaging and application of this sensitive but highly useful material.

Let us tell you why the uniformity and high purity of Mathieson *dry* Sodium Methylate will help you to obtain top yields with dependable control of production.

Pure, uniform MATHIESON DRY SODIUM METHYLATE is used as a chemical intermediate or catalyst in the production of dyestuffs, pharmaceuticals, insecticides, improved fats and oils —and in other processes involving the following chemical reactions: pyrogenic, metathetic, and oxidation-reduction reactions, condensations, and ring closures.

Dry, free-flowing sodium methylate is available for full-scale industrial application. Shipped in 10, 25, 50 and 200-lb. steel drums from Niagara Falls, N.Y. Also available as a 25% solution of sodium methylate in methanol in 55-gal. drums and 8,000-gal. tank cars. Samples and technical assistance are available on request.

MATHIESON CHEMICAL CORPORATION

Mathieson Hydrocarbon Chemicals Division

Baltimore 3, Maryland

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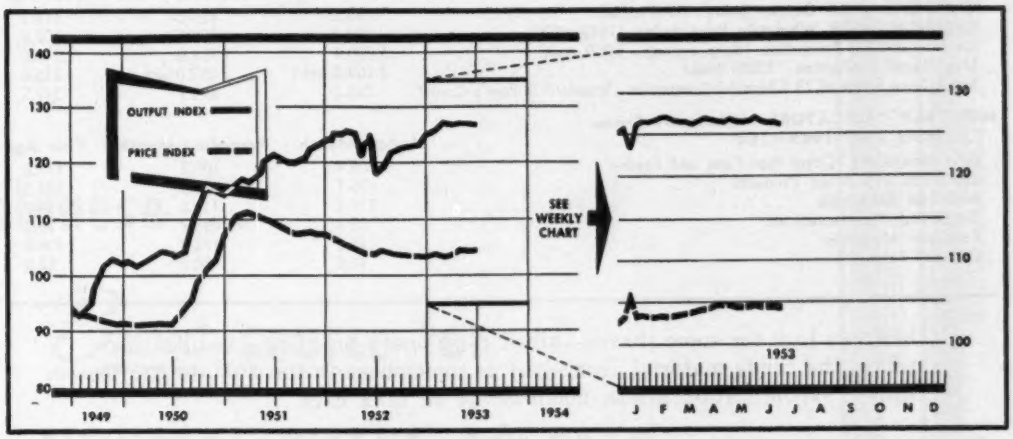
1779



CW Index of Chemical Output—Basis: Total Man Hours Worked in Selected Chemical Industries
CW Price Index—Basis: Weekly Prices of Sixteen Selected Chemicals

MARKET LETTER

It's not too difficult to plot the current pattern of chemical movements. Most important factor to take into consideration right now is the season.

For instance, the hotter weather is pushing the food and beverage industries' demand for citric acid (and its sodium salt) to a higher mark. Consumption of the acid—particularly by soft drink bottlers—is rapidly heading for a seasonal peak, is expected to reach it within the next month or so.

The same consumers are also taking sizable quantities of sodium benzoate. There's no danger of a shortage, however. Producers report supplies are about in balance with the demand, and prices will likely remain steady.

•

In summer, cameras are inevitable accessories for vacationers. That fact makes photographic material producers happy, of course. Some hydroquinone makers are falling behind in deliveries because of the seasonal crush of orders; but here, too, users' requirements will be filled—production capacity is ample.

•

Calcium chloride producers are beginning to feel the full impact of the summertime demand for roadway dusting treatments. While in most instances stocks are adequate to meet these demands, not a few makers are under pressure to keep all their customers satisfied.

•

Glycerine consumption, on the other hand, usually dips during the third quarter. But although pharmaceutical manufacturers have eased off a little on purchases, some trade observers see a fairly good demand outlook for glycerine this summer. Reason: munitions makers, other consuming sources are expected to stay in the market.

The big question is whether or not producers will be able to accommodate all buyers. Chances are they will, despite the usual vacation shutdown of soap plants and an expected reduction in imports.

There's a possibility, however, that optimistic prognosticators may be wrong; crude glycerine demands may slacken later on. If this

WEEKLY BUSINESS INDICATORS	Latest Week	Preceding Week	Year Ago
CHEMICAL WEEK Output Index (1947=100)	126.0	124.2	118.7
CHEMICAL WEEK Wholesale Price Index (1947=100)	104.8	104.6	102.6
Bituminous Coal Production (daily average, 1,000 tons)	1,580.0	1,788.0	1,116.0
Steel Ingot Production (1,000 tons)	2,169.0(est.)	2,092.0(act.)	316.0
Stock Price Index of 13 Chemical Companies (Standard & Poor's Corp.)	248.2	243.7	247.5

MONTHLY INDICATORS—Wholesale Prices (Index 1947-1949=100)	Latest Month	Preceding Month	Year Ago
All Commodities (Other than Farm and Foods)	109.4	109.8	111.2
Chemicals and Allied Products	105.7	105.5	104.3
Industrial Chemicals	119.2	118.0	114.9
Drugs and Pharmaceuticals	93.1	93.1	92.2
Fertilizer Materials	110.6	112.9	109.9
Oils and Fats	46.6	50.0	52.0

happens look for some shaves—albeit close ones—on price schedules. Currently the crude material (soap-lye) is somewhere in the 30½ to 31¢/lb. range; saponification grade, about 33½¢ in tank cars.

•

But the season had nothing to do with the surprising 5¢/lb. across-the-board slash in prices of maleic anhydride and fumaric acid. The reductions were almost simultaneously posted by major producers Monsanto and National Aniline late last week.

The former company frankly admits—and the latter concurs—that the cuts are a direct bid for more customers among polyester-glass fiber laminators.

Another hope: The lower prices may rouse some competition for phthalic anhydride uses.

•

The current phthalic anhydride condition—now tight—may soon do a complete flip-flop. Despite still-high backlog of orders, producers are prodding salesmen to hustle business—for early fall delivery.

Reason for the eye on the future: there should be a flood of phthalic on the market by then. Trade talk has it that there are upwards of 2 million lbs. of the material loaded and ready to go at American Cyanamid's Bridgeville (Pa.) plant. Holding it up, of course, is the long drawn out strike.

Though there's no settlement in sight at the moment—and even with the slight possibility looming that the company may shut up shop—that inventory, when released, will help ease the market.

Add to this the output from Barrett's new Chicago installation (at a reported 2½ million lbs/month rate) that should be hitting the market within 60 days, plus other producers' stepped-up production, and you have, at the very least, a right ample supply of phthalic anhydride in sight.

•

Stepped-up is the word for gasoline makers' promotional efforts. Hard on the heels of Shell Oil's TCP-added gas (CW, June 20), comes Pure Oil's "Sensitized" and Standard of Indiana's "Desert-tested" (in Arizona) products.

No additives involved, though. Secret of the former is a new blending and balancing; the latter, apparently similar, accents a no-vapor lock angle. These are but two; it's a cinch there'll be more.

SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending July 13, 1953

DOWN

	Change	New Price		Change	New Price
Fumaric acid, tech., bbls., drums	$ .05	$ .32	Maleic anhydride, dms., c.l., dlvd., E	$ .05	$ .32
Isonicotinic acid, 100-lb. fib. drums, works	3.00	5.00	Progesterone, USP, 100-gm. bots., gram	.26	.79

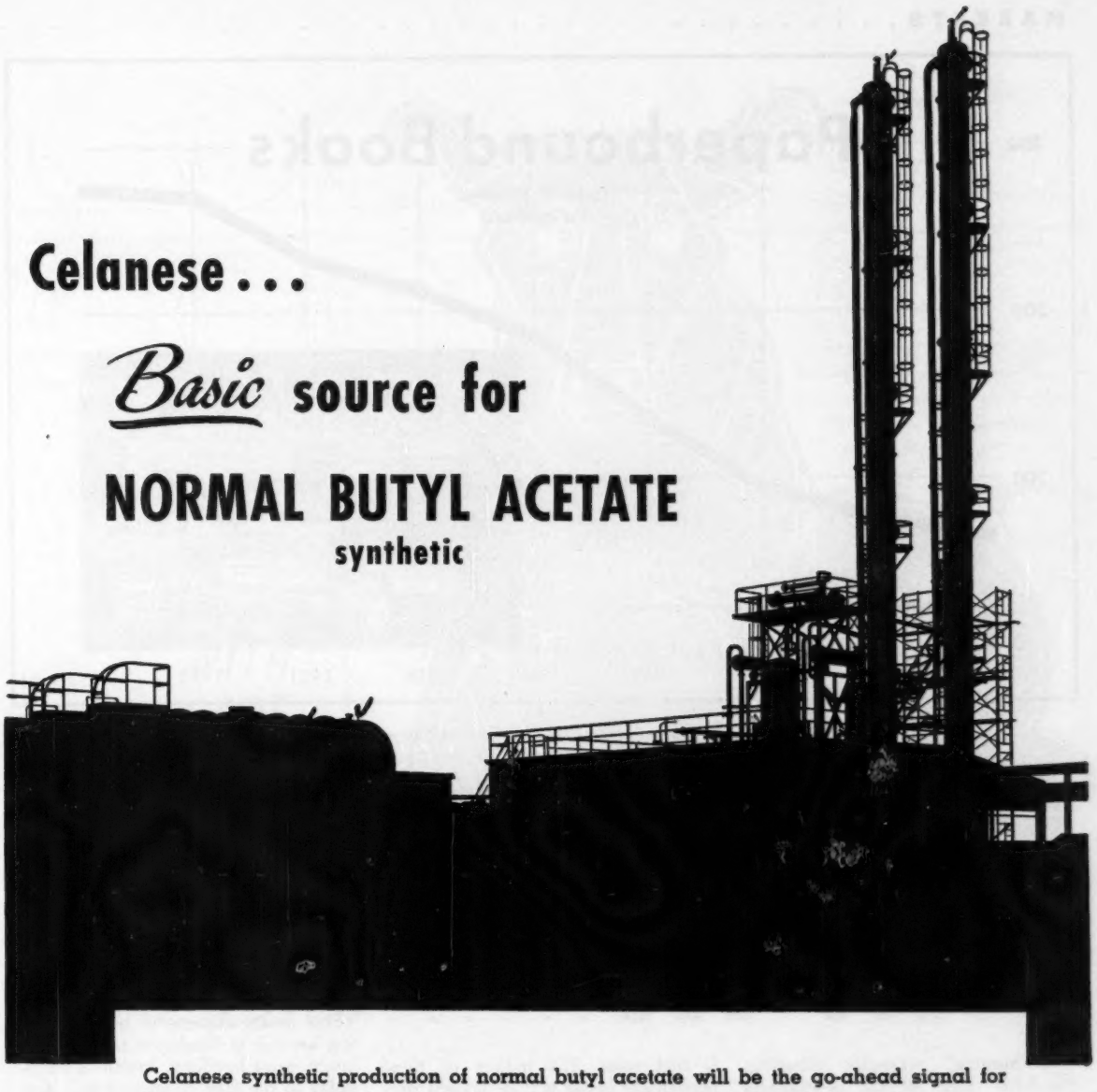
All prices per pound unless quantity is stated.

Celanese . . .

Basic source for

NORMAL BUTYL ACETATE

synthetic



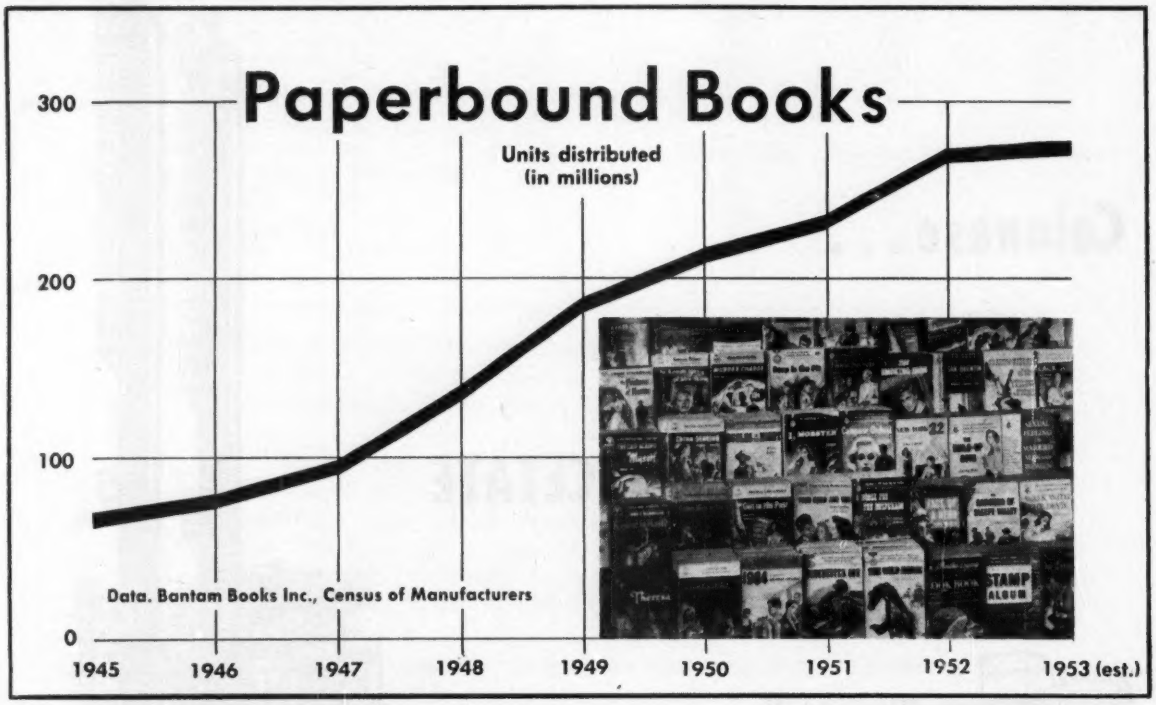
Celanese synthetic production of normal butyl acetate will be the go-ahead signal for lacquer manufacturers to reformulate with this traditional medium boiling solvent.

A petrochemical producer, Celanese operates from a basic supply position—drawing on Celanese synthetically-produced Normal Butanol and Acetic Acid to produce Celanese Normal Butyl Acetate. With an internal source of basic materials and expanding plant facilities, Celanese provides the continuous volume, uniform high quality and stable price structure that manufacturers can depend upon for accurate scheduling and future planning.

Celanese Normal Butyl Acetate is now available in tank cars and drums. You can order other Celanese Solvents with Normal Butyl Acetate in compartmented cars or mixed drum carloads. Tankwagon deliveries in key areas. For complete information, write:
Celanese Corporation of America
Chemical Division, Dept. 652-G
180 Madison Ave., New York 16.

Celanese* CHEMICALS

*Reg. U.S. Pat. Off.



PAPERBOUND BOOKS: The curve is upward for the multimillion-unit adhesives outlet while . . .

Hot Melts Bind a Market

New synthetic resin-based hot-melt adhesives bid fair to upset some well-established bindery practices, gobble up a goodly share of the protein glue market.

There are still some brake-applying bugs to be ironed out, however, before they reach Utopia, e.g., resin insolubility, expensive equipment requirements and—importantly—price.

"Book-burning" wrangles crowding the front pages of the newspapers may or may not have you taking sides. But there's no doubting that books themselves are drawing the cooperative and more than interest-piqued attention of quite a few allied chemical process industries.

More specifically, it's the binding of the books that is catching the eye of resin manufacturers, adhesives formulators, paper makers, binders and a host of others. For book backs may well represent another booming, multimillion dollar market—this time for synthetic resinous materials such as polyvinyl acetate, polyamides.

Despite the vaunted competition from television, movies, nightclubs and other forms of entertainment, people are still reading. One how-much indicator is the sharply tilted paperbound book distribution curve (*see chart*). An industry expectation is that some 274 million of these pocket-size books will be bought during 1953. Compare this with the relatively low 66 million in 1945.

A major propellent behind the low price that has put nearly a half billion of these economical little volumes in circulation is the comparatively new synthetic "hot melt" adhesive binding.

Target for Tackiness: Had CW's "target" series been running back in the middle '40s, chances are that book-binding would have been a likely subject.

It was just about then that companies in the binding trade, rounding out a 50-year swing from hand-sewing or stapling to the technique of gluing the pages together to make books, banged up against a surging demand for the economy-priced paperbound type of literature. At the time, the small books were virtually standard GI equipment for the armed services.

But a bottleneck developed in the binderies that could have stymied the growth of this now-flourishing segment of the book industry. The available glues were not adequate to cope with the mounting pressure for assembly-line production. Here's why:

- The glues were temperamental in the bindery, required "coddling" before and during use.
- It took hours for them to dry. (This meant millions of books standing around in binderies taking extra space, extra handling. Result: a costly delay in the flow of operations.) And there are other disadvantages that make glue—with the addition of glycerine or glycols for permanent flexibility—a far from ideal binding substance. In service, the glues pick up moisture from the air, weaken, soon cause the book to fall apart. In dry climates, they dry out, get brittle, fail just as badly.

In 1944 the W. F. Hall Printing Co. posed to Du Pont the problem: Is it possible to develop an adhesive that will dry quickly so books can be trimmed right after binding? Other requirements: the adhesive had to be strong, flexible—and stay that way under all climatic conditions.

Du Pont's answer to the problem was a new "hot-melt" adhesive. Though the company is still tight-lipped about details, it's a safe bet the new product is based on poly-

A. Gross . . . . . RED OILS

A. Gross Red Oils are outstanding as to stability and resistance to discoloration. They are manufactured in stainless-steel equipment, packaged in specially lined drums, tank wagons, tank cars—to insure freedom from contamination.

Your process requires a Red Oil that has been handled with care, not only in our operations but in yours as well. Our Sales Service Department welcomes customer inquiries on how best to maintain Red Oil purity during your final application procedures.

Send for samples and our booklet "Fatty Acids in Modern Industry."

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vinyl acetate. At that time, too, the U.S. Government Printing Office in Washington—anticipating an animal glue shortage—was also probing a PVAc.-based binder.

Melted at high temperatures (300-350F) and applied to the backbone of books or magazines, the hot-melt adhesive (as opposed to the "warm melt," 140F, animal glue), sets immediately on cooling; is literally unaffected by weather conditions, gives a tough, strong, mildew-resistant bond.

Synthetic Cropper: When the binders added water resistance as a looked-for adhesive characteristic, they got what they wanted; but the paper makers reaped a problem. During trimming of the books some of the synthetic adhesive was sliced off along with the paper, wound up in the scrap sold to paper and paperboard mills.

The new product, being water resistant, was not soluble in the normal alkali solutions needed to rework the waste paper. And scrap paper stands in the same relationship to papermaking as scrap iron does to the steel industry. (Reclaimed material represents about 35% of the total fiber used annually in the paper industry.)

Unfortunately, the insolubility of the synthetic resins did not become apparent until after new paper made from the waste had been put on press. Then it was discovered that the undissolved adhesive that deposited throughout the stock produced unprintable areas on the sheets; inks failed to adhere or set on them.

Du Pont hurriedly brought out an alkali-dispersible variation described as a polyvinyl acetate-crotonic acid copolymer. This cropped the cropper, the problem was licked.

While most adhesive formulators* have now set up formulas resulting in a product soluble in about an 8% alkali solution, recent de-inking tests by International Paper Co. on National Adhesive's hot melt showed good dispersibility in a 4% caustic dunking. And Du Pont claims its product works satisfactorily in a water solution containing only 1/10 of 1% of alkali.

Despite this industry emphasis on alkali-dispersibility, at least one skeptic raises a pertinent, hard-to-brush-off point, says this is fine where scrap paper is first run through a de-inking alkali bath, but clean white trimmings, for the most part, never get near the alkali bath.

This may be one reason why the use of hot melt is by and large restricted to non-news bindings, why magazines—which are more apt to wind up on the scrap pile—still use water-soluble animal glues. For even synthetic adhesive makers admit that only two pounds of contaminant can ruin up to 200,000 lbs. of waste paper.

That possibility, however, is not a deterrent to a few popular periodicals, among them *Fortune* and *Reader's Digest*. The former, in an effort to shed its old-style staples, had R. R. Donnelley and Sons run off some hot-melt copies. The results were so good, *Fortune* will continue to be bound with the new process in spite of the almost doubled cost and longer binding time.

One hurdle successfully vaulted by the *Fortune* binders: the synthetic resin adhesives work well on newsprint-type paper, are far less effective on coated (or slick) papers. Although book-binders are as understandably reluctant as some adhesive formulators about divulging their processes, it's a cinch Donnelley's "secret" method involves pre-priming the paper so the hot melt will take.

At the moment some *Reader's Digests* are being put together with side stitching and the hot melt used only to attach the cover. More and more of other editions, however (from different binderies), are coming out in the "plastic" binding.

The time-honored stitching process is also being replaced with hot-melt adhesives by some makers of hard-back or "edition" books.

How Big? It's impossible to describe in full—in anything less than a volume each—the different binding methods (notch, pattern, electronically-sealed, European and American methods of "perfect" binding); or to describe the work of cooperative committees, made up of representatives of the publishing field, the printing, paper, adhesive, and the resin industries, and special equipment manufacturers, which are all striving to broaden the market for hot melts.

And it is equally as difficult to pinpoint that market in any actual pounds-consumed table because of the variables involved, e.g., size of the book, amount of adhesives used per book—some spread it thick, some thin—the use or non-use of primers. One private considered estimate, however, stacks up the current hot-melt adhesive figures for books like this:

Book-binding Hot-Melt Adhesive Consumption 1953 (Est.)

Pocket-size or paperbound	1,000,000 lbs.
Magazines, other presses	500,000 lbs.
Hard-backs or "editions"	500,000 lbs.

If—and it's a big if—all magazines, telephone directories and catalogs were able to use the new method, the market could easily explode from that current 2 million to 10 or 12 million lbs.

But at present, cost is the controlling factor. Hot melts are too expensive for directory or catalog use; and for most magazines, too, because the insoluble resins make trim non-disposable through usual channels.

The old-line glue and glycerine-or-glycol combination has still another economic advantage that will likely lengthen its hold on the top binder-use rung. Its price/lb. is at least half the current range (45-65¢) now sported by the new challenger.

Slow Start, Fast Finish—

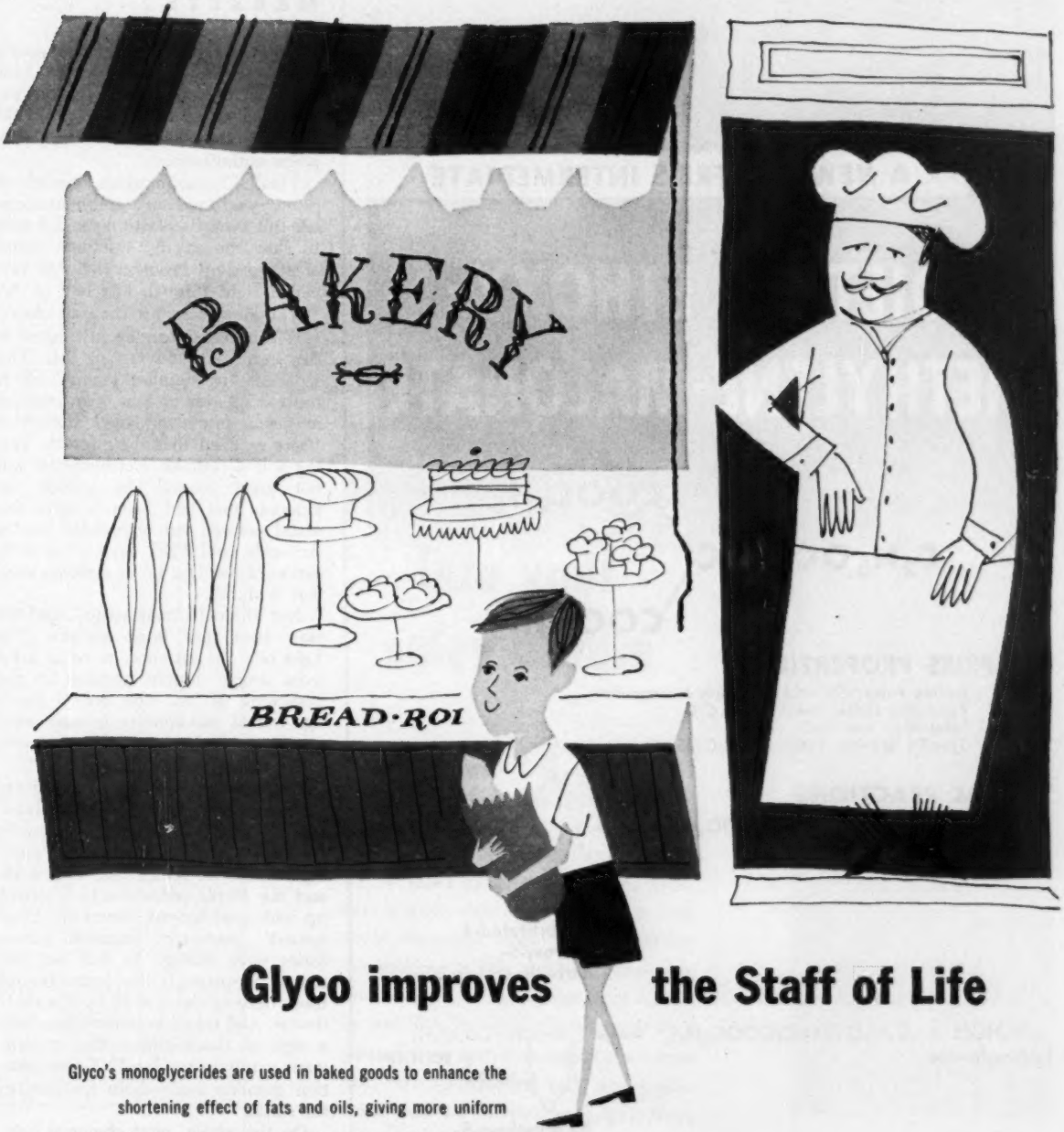
When the government's fact-gathering Tariff Commission this week unveiled its preliminary statistics on the nation's output and sales of tar and tar crudes for last year, it merely gave official crystallization to an industry-wide reckoning: business, on the whole, was somewhat worse in 1952 than it was during the year before. The report—which represents data on the production and sales of tar, crude light oil, creosote oil, and crude products derived from coal tar, such as benzene, toluene, xylene, naphthalene establishes the 1952 production of all tars (coal, water-gas, oil-gas), at 820 million gal.—about 12% under 1951's 932 million gal.

The commission points out that the decline in tar output—particularly in the eastern part of the U.S.—was caused by further displacement of manufactured gas by natural gas, and to reduced production of tar by the coke-oven industry in the early part of the year.

Though the government figures accurately indicate that the post-Korea, '51 boom outstripped last year's sales and production (except for toluene), they give no hint of the behind-the-scenes factors that, in a way, minimize the declines.

Year-End Step Up: In retrospect, it is easily seen that 1952's coal chemicals market activity was like a rocket. The year began at a comparatively slow pace, sluggishly pushed through

*Among the majors in the field: Du Pont, National Adhesives, Illinois Adhesives, Manhattan Paste, Federal Adhesives, Paisley Products.



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MARKETS . . . . . .

the hindering atmosphere of spring and early summer steel strikes (and concomitant coke-oven shutdowns), then picked up speed going into fall and the rarefied air of election campaign enthusiasm.

Finally, some markets leveled off as year-end inventory problems loomed. But even these problems did little to slow the steady, sustained tempo of stepped-up business that has prevailed right through first half of '53.

The slow '52 start for coal chemicals in general can be attributed to the hard, fast buying of '51. This scramble for supplies tapered off in the last quarter of that year, resulted in not a few overloaded stockpiles. Users realized that their frantic buying was a mistake. Consumption was not great enough to gobble the amounts that had been bought. Demand petered out, especially for the tar acids, and 1952 gave every indication of winding up as a slump year. But it didn't.

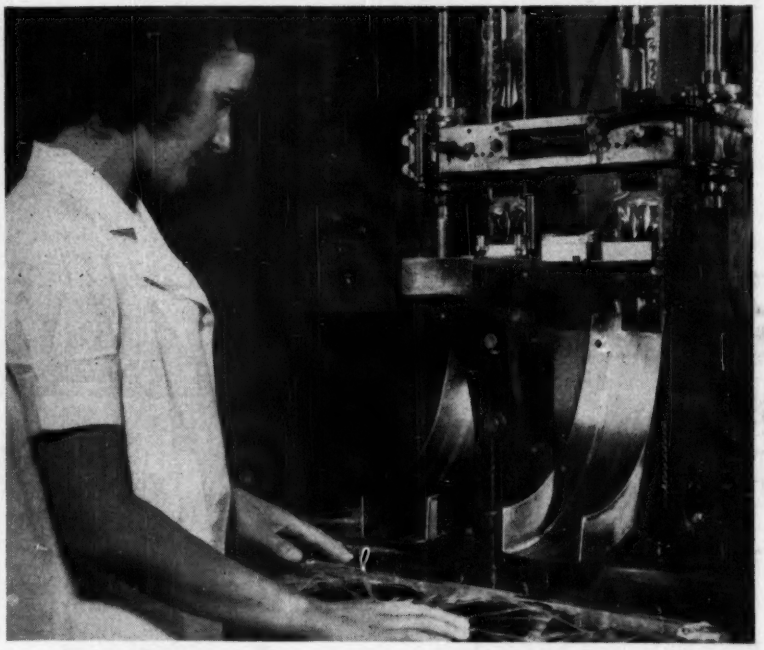
Not all coal chemicals followed the slow start, fast finish pattern. The light oils, for instance, were in a far from ample supply position at the beginning of '52. The benzol shortage was of real concern to many consumers; toluol was tight; so were crude naphthalene supplies.

Steel Strikes No Bane: During the strike period these shortages didn't seem so acute. By then the early-year slackening in plastics, protective coatings, synthetic resins and adhesives, and the textile industries had caught up with coal-derived chemicals. Consumers' previously acquired inventories were enough to ride out the strikes. Surprisingly, the larger benzol users were not hurt at all by the shutdowns. And toluol producers breathed a sigh of thanksgiving that government requirements for TNT and aviation gasoline were there to take up the slack.

On the whole, most chemical buyers and sellers agree that although business in 1952 was somewhat slower than the year before, when compared with any other recent year, it was still good—in spite of the cold, hard statistics of the Tariff Commission's report.

But the big answer-begging question in the trade is this: What will the agency's next report—for 1953—show? At least one major coal-tar chemicals producer is willing to go out on a limb, risk a guess on the future. Says he, "If the first half of this year is any indication, I feel certain most of our products—especially the big three: benzol, toluol, xylol—will wind up at higher production and sales peaks than they did in 1952."

SPECIALTIES...



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INDIVIDUALIZED SERVINGS: Sauce for the converters.

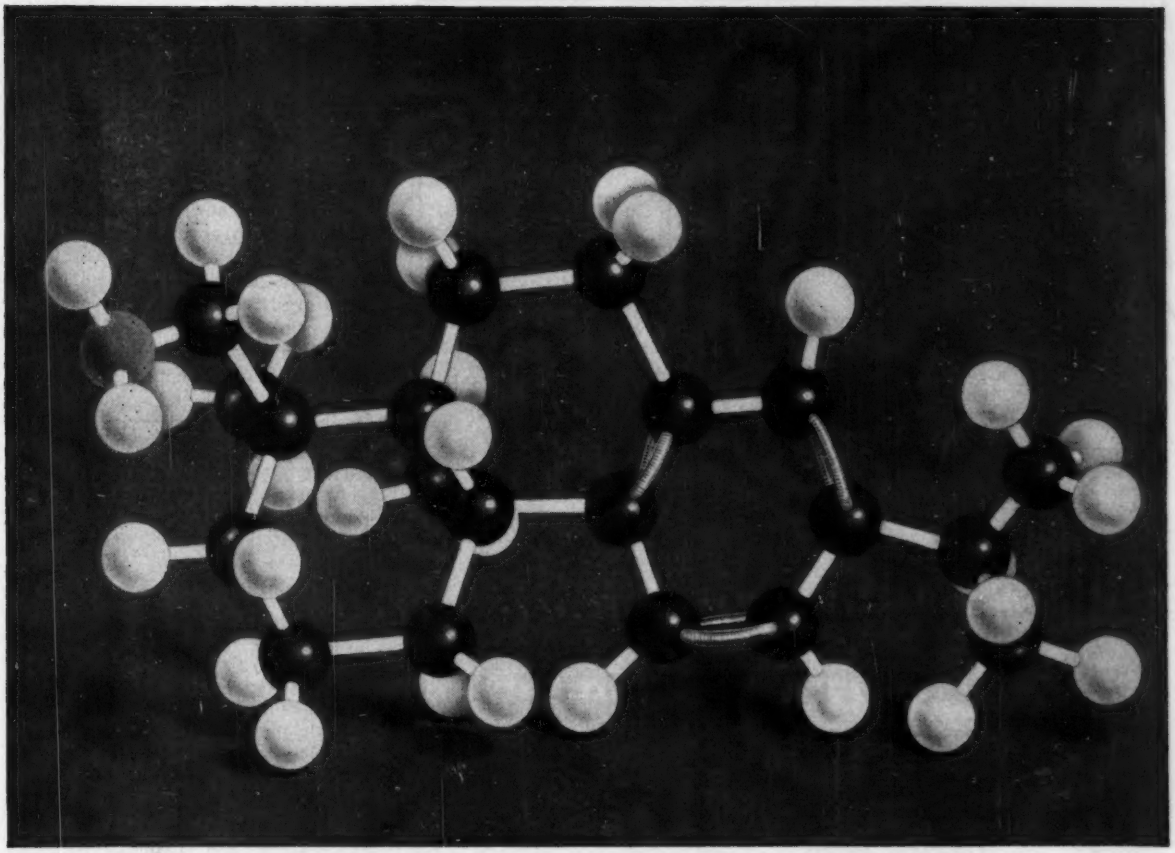
Pairing Solves the Problem

Polyethylene-cellophane films, laminated without use of adhesive, are opening new fields in packaging specialties, cosmetics and foods.

At least two firms are producing the sticker-free sheeting, but there's plenty of competition from makers of glued laminates.

The boom in packaging specialties and fruit juices (*CW, Mar. 28*) in plastic films got a boost with the recent introduction of polyethylene-cellophane laminates produced without adhesives.

Since early this year, Cheslam Corp. (division of Chester Packaging Prod-



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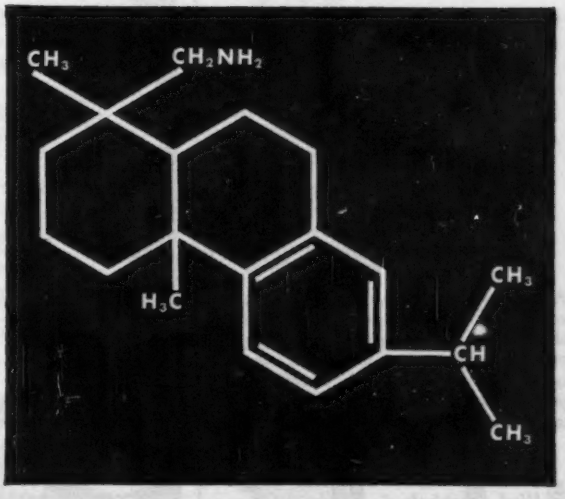

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*TRADE MARK

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ucts Corp., Yonkers, N.Y.) has offered its Cellothene, and H. P. Smith Paper Co. (Chicago) has been turning out its Polycel, both adhesiveless laminates.

Advantages of the combination film, Cheslam and Smith say, is that it provides the best features of the two component sheets, without their faults. For example, the combination sheetings have the transparency, gloss and printability of cellophane; the durability, stability and resistance to sunlight of polyethylene.

And the big advantage over the laminates using adhesives, the makers claim, is that there is no delamination with aging or at high temperatures.

As a result, a host of new products seems slated for individual packing in the plastic pouches: quick frozen juices, soy sauce, suntan oil, mothballs, face cream, first aid medicine—there's almost no limit to what might be put up in the small, convenient, single-use units.

Plypaper: Both Cheslam and Smith are indefinite on how they pair the polyethylene and cellophane (the processes are unpatented). There is some pretreatment of the cellophane: with Smith it involves an unidentified organic chemical; Cheslam terms it a temperature and vapor treatment. Smith coats on the polyethylene at about 500 F; Cheslam calls its laminating process "controlled extrusion."

Paper, foil, even cloth, can be coated by the processes (a number of firms offer poly-coated papers and cellophane, etc., but the adhesiveless cellophane-poly films are apparently a Cheslam and Smith exclusive). Thickness of the poly layer is easily varied, and in cases where it's desired, both sides of the cellophane can be coated. Or, paper or foil can be sandwiched in.

The gauge of the cellophane and the thickness of the polyethylene can be varied to meet specific needs. Cost of the laminates is about $1.10-1.20/lb.—considerably more than either of the components (cellophane is about 63¢/lb.; polyethylene 75¢/lb.).

Pinch Pack: The individual packages, for which the laminates appear particularly suited, are generally heat-sealed, can be turned out at a 75-85-a-minute clip. Various machines are suitable for the packaging (*see cut*) —typical is the Transwrap sealer (Transparent Wrapping Machinery Corp., Hackensack, N.J.) at General Packaging Service, Inc.'s Hackensack plant. This machine seals the unit in such a manner as to produce a pouring spout when the packet is opened.

Though Cheslam and Smith have

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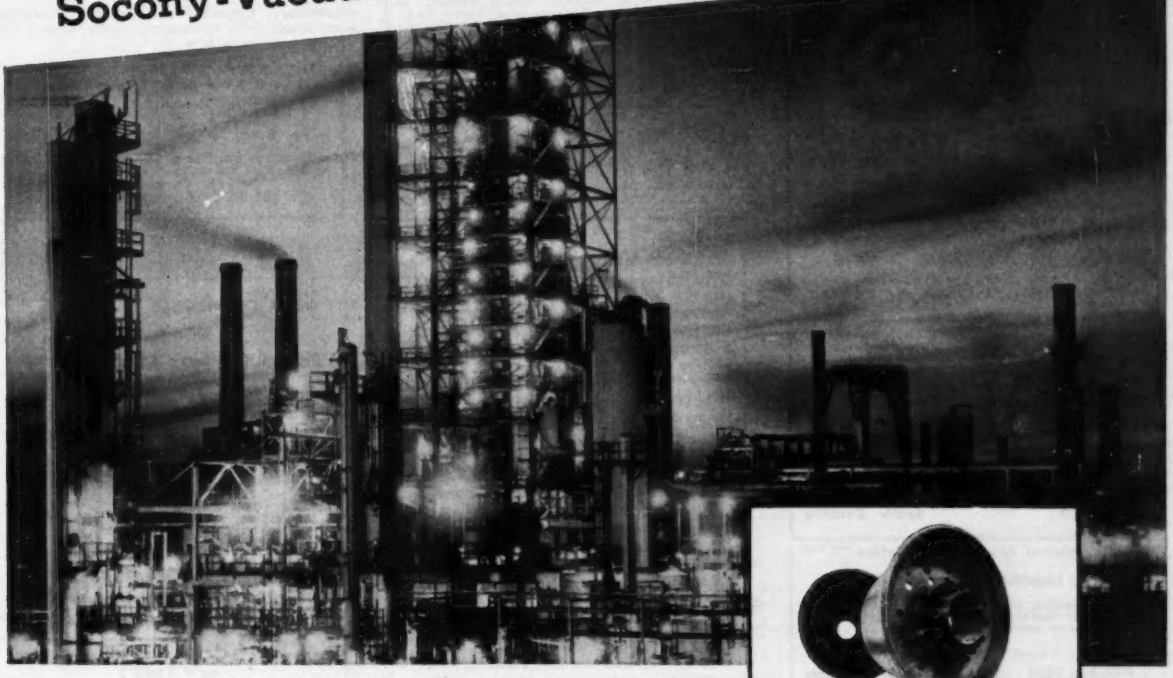

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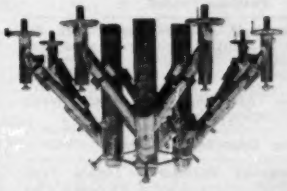

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the head start, there's no question but that a host of competitive converters are working on similar laminates. And if the packs live up to their promise—fruit juices alone might demand over $2 millions' worth of film—there'll be plenty of business for all.

Warming Up for Winter

Icy roads—that's what Rock Road Construction Co. is concerning itself with these hot summer days: the Chicago road-building firm is interested in ice that chokes highway traffic, renders roads hazardous to motorist and pedestrian alike—in winter.

Actually, this seemingly anomalous warm-weather preoccupation makes good sense. Rock Road isn't merely contemplating winter's ravages; it's taking advantage of the balmy season to evaluate a new chemical melter that could pose a threat to winter pavement aids. At the peak of the Midwest's recent blistering heat wave, the company launched tests of a new de-icing preparation.

Intended for use in asphalt and concrete pavements, the new agent is incorporated into the paving material during road-building, gives built-in ice protection. It's inventor: retired German construction engineer Wilhelm Rademacher. CHEMICAL WEEK ferreted out the development in its German infancy, reported earlier in the year (*CW, Jan. 24*) that "an American highway construction firm . . . is checking on it."

Jaw-breaker: Originally dubbed Electroswa Clorcatrinat 999, the product was reportedly capable of melting new-fallen snow, preventing the formation of ice on road surfaces. Moreover, it was said to be noncorrosive, non-injurious to paving materials or rubber tires. Composition, however, was kept a deep secret.

Rock Road Construction Co., which has exclusive rights to manufacture and market the novel melter, is just as tight-lipped as its inventor, says only that it's "an alkaline mixture of readily available chemicals." Part of this secrecy doubtless is due to the fact that a U.S. patent (though applied for) has not yet been granted.

In practice, the mixture is now combined with aggregate (3.3 gal./ton) when the pavement is laid. If it is released to the construction market, however, it may be necessary to reduce the fluid to a more conveniently handled powder that could be mixed directly with asphalt or concrete slurry.

Patch Test: Triggered by falling temperature, the mixture releases heat, warms the road surface. It all happens automatically with but one exception: if the mercury plummets too rapidly, some snow plowing is needed to allow the reaction to get started. The formulation, Rademacher (now in Chicago) asserts, gave good results in winter-long tests on a 500-sq.-yd. patch of asphalt road near Munich. He claims it melted three inches of snow in 90 minutes, prevented adhesion of ice even at subzero temperatures.

Additional data on the product's performance are reportedly in the hands of the German Transport Ministry, which has not made them public.

The Midwest construction firm understandably wants to see for itself. To this end, Rock Road President William Nanini says his firm expects to spend about $20,000. Now in the laboratory, Rademacher's invention is slated for a field trial next winter on a small paving project. If plans shape up, the test pavement may be laid in September on a one-mile strip of Chicago's lakeside Outer Drive.

Nanini, a practical construction man, admits he's skeptical, won't market or license the product until all claims are verified. He particularly wants to be sure the melter won't be exhausted after several snowy months.

Nix on Sprinkling: Even if the mystery material proves out, it won't take the chemical snow-removal market by storm. First off, it's relatively costly, boosts the road-building tab by an estimated 10¢/sq. yd. And, unlike conventional agents, it can't be sprinkled on pavements, must be built into the road. Consequently its field is pretty well limited to new road construction and repaving jobs.

All things considered, Rademacher's melter isn't soon going to topple rock salt from its perch of preeminence as a snow remover. But that doesn't mean its lacking a niche of its own. It has evoked a flood of interest from highway departments throughout the country, may fill a long-standing need for a permanent, noncorrosive anti-ice agent to obviate post-storm plowing.

•

Mold in Your Eye: California Board of Public Health has amended regulations of the California Administrative Code to permit use of penicillin ointment as an alternative to silver nitrate solution for the eyes of the newborn.

The state will continue to supply persons engaged in practice of obstetrics with wax ampoules of 1% silver nitrate solution; the penicillin won't be available from the department.

•

Paper Plant: New $750,000 Western division plant of the American Reenforced Paper Co. went into production last month at Tracy, Calif.

•

Corrosion Preventer: Nitrox is a new combination cleaner and inhibitor for use in steel tanks holding hydrocarbons, inedible oils, solvents, and the like. Nitrox, made by Solvay Process Div., Allied Chemical & Dye Corp., is sold in flake form in 100-, 200-, and 400-lb. steel containers.

•

Carnauba Competition: Emulsion Chemical Co., Inc. (Staten Island,

BITUMINOUS SURFACING: Will chemical additives eliminate the snowplow?

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JULY 18, 1953

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Boston 16 .....350 Park Square Building, Hubbard 2-7160

Detroit 26.....856 Penobscot Bldg., Woodward 2-1793

Pittsburgh 22.....738 Oliver Bldg., Atlantic 1-4707

St. Louis 8 .....3615 Olive St., Continental Bldg., Lucas 4867

SPECIALTIES . . . . .

N.Y.) is now introducing a new synthetic wax said to reproduce the colloidally active properties of natural carnauba wax. The new material is priced under a dollar per pound, is light tan in color.

It's claimed to apply to carnauba wax formulations, and supply, once the firm has gotten into full production, is expected to be stable. The manufacturing process is being patented; Emulsion does not plan to license.

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How To Make It: Atlas Powder Co. (Wilmington, Del.) is now making available to the trade an 88-page manual on cosmetic formulations and drug recipes. The book, obtainable from the Industrial Chemical Dept. of Atlas, is free to manufacturers writing on their letterhead, is priced at $2/copy to others.

•

Fluoride Pickler: Substitute Actane 33 for HF, says Enthone Inc. (New Haven, Conn.). Its new pickling and activating agent is a crystalline acidic mixture containing soluble fluorides, penetrants, and activating agents; it is suggested for descaling iron, pickling stainless steel. Enthone claims it has many of the properties of hydrofluoric acid, without its hazards.

•

Textiles Too: Hilton-Davis Chemical Co. (Cincinnati) is now pushing its bacteriostat, Lorothidol, as a possible fungicide for textile use. The compound, currently used as a deodorant in soaps and cosmetics (*CW, Mar. 14*), might function as a deodorizer in clothing, too, by eliminating perspiration-decomposing bacteria.

•

Pill Production: Simplifying and improving tablet manufacture has been achieved by use of a new lubricant called Aldo 33, Glyco Products Co., Inc. (Brooklyn) declares. Advantages: Low punch pressures are needed; tablets aren't "waterproofed" by the lube; rejects due to chipped and capped pills are reduced.

•

Hand in Soap: Three St. Louis brothers, Frank, Sol and M. A. Steinback, have purchased the Gillam Soap Works, Fort Worth, Tex., for about $500,000. E. O. Gillam, founder of the firm, will be retained as adviser for some six months before retiring.

•

Pot-Size Package: Two-ounce packages of Monsanto's Krilium are going on sale now. The new packets, holding enough of the soil conditioner for about 34 four-inch flower pots, will sell for 29¢.

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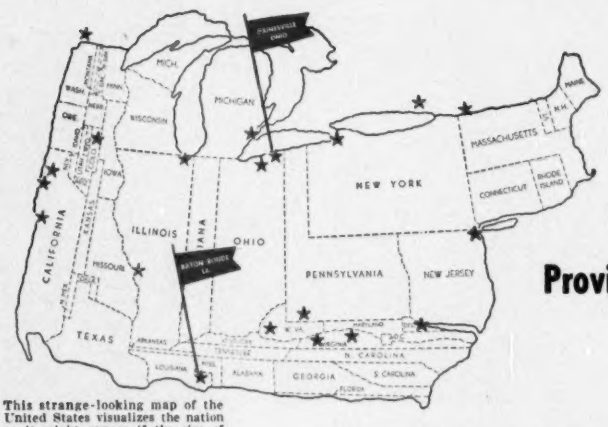

This strange-looking map of the United States visualizes the nation as it might appear if the size of each state were determined by the value its manufacturing concerns add to the nation's industrial output. It is based upon the figures appearing in the 1949 and 1950 Annual Survey of Manufacturers prepared by the U. S. Department of Commerce, Bureau of the Census.

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